

Medical Library

THE

MEDICAL



JOURNAL

OF AUSTRALIA

VOL. II.—30TH YEAR.

SYDNEY, SATURDAY, JULY 24, 1943.

No. 4.

COMMONWEALTH OF AUSTRALIA

Department of Health

Commonwealth "INSULIN"

INSULIN IS AVAILABLE AT THE FOLLOWING PRICES:

10 c.c. phial of 200 units (20 units per c.c.)	3/-
10 c.c. phial of 400 units (40 units per c.c.)	5/8
5 c.c. phial of 300 units (60 units per c.c.)	4/3

PROTAMINE ZINC INSULIN

COMMONWEALTH PROTAMINE ZINC INSULIN IS AVAILABLE AT THE FOLLOWING PRICES:

1 x phial containing 5 c.c., 40 units per c.c.	3/4
1 x set of 12 x 5 c.c. phials in one box, 40 units per c.c.	38/-
1 x phial containing 5 c.c., 80 units per c.c.	6/8
1 x set of 12 x 5 c.c. phials in one box, 80 units per c.c.	74/-

Every batch of Commonwealth Insulin is carefully tested before issue and the UNIT EMPLOYED IS THAT OF THE STANDARD ISSUED UNDER THE AUTHORITY OF THE LEAGUE OF NATIONS.

COMMONWEALTH INSULIN IS—HIGHLY PURIFIED, STABLE, ACTIVE, STERILE

Commonwealth
PITUITARY EXTRACT

IS PHYSIOLOGICALLY STANDARDIZED IN ACCORDANCE WITH THE RECOMMENDATIONS OF
THE LEAGUE OF NATIONS TECHNICAL CONFERENCE.

1 box of 6 x 1 c.c. Surgical,	20 International Units per c.c.	8/6
1 box of 6 x 1 c.c. Surgical,	20 International Units per c.c.	5/-
1 box of 6 x 1 c.c. Obstetrical,	10 International Units per c.c.	5/-
1 box of 6 x 1 c.c. Obstetrical,	10 International Units per c.c.	3/6

Supplies may be obtained from the Commonwealth Serum Laboratories, Parkville, Victoria, and also from the following: Director-General of Health, Canberra; Chief Quarantine Officer (General), Anzac Square, Adelaide Street, Brisbane, Qld.; Chief Quarantine Officer (General), Customs House, Circular Quay, Sydney, N.S.W.; Chief Quarantine Officer (General), C.M.L. Building, 41-47 King William Street, Adelaide, S.A.; Chief Quarantine Officer (General), G.P.O., Perth, W.A.; Chief Quarantine Officer (General), Commonwealth Health Laboratory, Launceston, Tasmania.

COMMONWEALTH SERUM LABORATORIES
PARKVILLE, N.2 — VICTORIA — AUSTRALIA



Directorate of the B.M.I.

Dr. C. H. Mollison (Chairman), Dr. R. H. Fetherston, Dr. J. Newman Morris, Dr. F. Kingsley Norris, Mr. T. E. V. Hurley.

Are You Fully Covered Against Loss by Burglary ?

In these days of rationed goods a stocktaking is essential in order to ascertain if you are completely protected.

Check up the value of your belongings and

Insure with the B.M.I.

A B.M.I. policy indemnifies you against loss in case of theft of Clothing, House Drapery, Personal Effects, Jewellery, Furs—Furniture, Silverware, Crystal, Instruments—Car, etc.

It also compensates you in case of damage by Burglars.

Another B.M.I. Policy affords protection should luggage be lost or stolen when travelling, or at Home or Guest House.

The B.M.I. is the Doctors' own Company, operating under the aegis of the B.M.A.

Surplus profits are devoted to the work of the Medical Organisation.

Full particulars available.

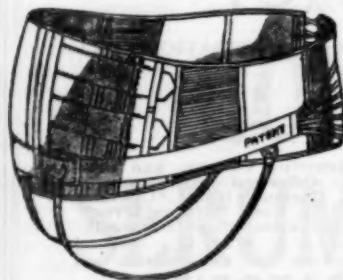
THE BRITISH MEDICAL INSURANCE COMPANY OF VICTORIA LTD.

389-395 Little Flinders Street, Melbourne, C.I.

'Phone: M 1871 (9 lines).

THE Jenyns PATENT CORSETRY

Affords Efficient Support and Assistance for Cases of
**MATERNITY, POST-OPERATIVE, HERNIA, SACRO-ILIAC,
VISCEROPTOSIS, ETC.**



The most advanced scientific support and control are embodied in JENYNS garments.

If requiring Surgical Belts, Corsets, Girdles, Corselettes, Brassieres, Spinal Supports, Trusses of all kinds or Elastic Supports, insist on a "JENYNS". Made-to-order garments a specialty.

Procurable from all Leading Stores.
Enquiries are solicited.

THE JENYNS PATENT CORSET PTY.

309-315 GEORGE STREET, BRISBANE.

MADE IN AUSTRALIA.



THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—30TH YEAR.

SYDNEY, SATURDAY, JULY 24, 1943.

No. 4.

Table of Contents.

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES—	Page.	BRITISH MEDICAL ASSOCIATION NEWS—	Page.
Pulmonary Tuberculosis: Bacteriological Examinations Supplementing Routine Thoracic Radiography in the Australian Military Forces, by Reginald Webster, M.D., D.Sc., F.R.A.C.P.	61	Medico-Political	76
REPORTS OF CASES—		CORRESPONDENCE—	
Amoebic Dysentery in the Northern Territory, by H. B. Fay and C. A. W. Johnston	67	Sensitization to Carrot (External Contact)	78
REVIEWS—		Pemphigus	79
Biochemistry and Morphogenesis	69	MEDICAL PRACTICE—	
Surgical Care	70	Restriction of Interstate Passenger Transport by Railway	79
The Forgotten People	70	NAVAL, MILITARY AND AIR FORCE—	
LEADING ARTICLES—		Appointments	79
The Use of Rubber Gloves in Surgery during the Present Emergency	71	Casualties	79
CURRENT COMMENT—		OBITUARY—	
The Prognosis of Acute Coronary Occlusion	72	Joseph George Thompson	79
Pentothal Anaesthesia	73	James Pirie	80
ABSTRACTS FROM MEDICAL LITERATURE—		NOMINATIONS AND ELECTIONS	80
Medicine	74	MEDICAL APPOINTMENTS	80
		BOOKS RECEIVED	80
		DIARY FOR THE MONTH	80
		MEDICAL APPOINTMENTS: IMPORTANT NOTICE	80
		EDITORIAL NOTICES	80

SUPPLEMENT NUMBER 20 ON WAR MEDICINE AND SURGERY: Diseases of the Skin in Wartime.

PULMONARY TUBERCULOSIS: BACTERIOLOGICAL EXAMINATIONS SUPPLEMENTING ROUTINE THORACIC RADIOGRAPHY IN THE AUSTRALIAN MILITARY FORCES.¹

By REGINALD WEBSTER, M.D., D.Sc., F.R.A.C.P.,
Major, Reserve of Officers, Australian Army Medical Corps; Pathologist to the Children's Hospital, Melbourne.

THE objectives and underlying principles of the work which it is now proposed to review were defined in a preliminary report, which was published in the *British Medical Journal* of May 10, 1941, under the title "Bacteriological Examinations Supplementing the Radiological Survey of the Australian Imperial Force".⁽¹⁾ This report was furnished to the National Health and Medical Research Council and the Director-General of Medical Services conjointly and presented *interim* findings as obtained for the year 1940, during which period the inquiry was pursued among 322 recruits in whom routine thoracic radiography indicated that bacteriological examinations with respect to tuberculosis might profitably be instituted. In 1941 the investigation, while concerned primarily with recruits for the Army, was extended in scope to include applicants for enlistment in the Royal Australian Navy, the Royal Australian Air Force, the Australian Army Nursing Service, the Australian Women's Army Service, the Australian Army Women's Medical Service, and the Women's Australian Auxiliary Air Force.

It may fairly be claimed that the development by which all the Services have participated in the bacteriological examinations was the direct result of the immediate

practical utility of the findings as determined for the Army during 1940, and work which was initiated for its research value quickly established itself as routine procedure. The research value of parallel bacteriological work lay in the prospect that it offered of securing data upon which the accuracy of diagnosis by miniature radiography might be assessed, and in the promise it afforded of elucidating facts regarding the number of tubercle bacillus "carriers" in a large and presumed healthy section of the population. In the present communication I do not propose to expend any space in the formulation of reasons which demand the maintenance of bacteriological control of radiological diagnosis in pulmonary tuberculosis. Such a finding, inducing anxiety concerning his health and fear of economic and social disability, is of such moment to the patient that it should be certified in the bacteriological laboratory whenever possible.

Methods and Procedure.

It is not my intention to traverse again arguments which I have already advanced⁽²⁾ why the microscopic search of smear preparations of sputum for tubercle bacilli should be superseded as the bacteriological standard in the diagnosis and control of pulmonary tuberculosis by reliable methods of cultivation, nor am I inclined at the present juncture to reopen the question of the relative merits of guinea-pig inoculation and cultural methods. So eminent an authority as G. S. Wilson⁽³⁾ allows that there is little to choose between animal inoculation and cultivation for the detection of microscopically elusive tubercle bacilli, but the scale of the projected examinations disqualified the guinea-pig for routine bacteriological diagnosis. As a means of coping with a continuous inflow of large numbers of specimens, guinea-pig inoculation is slow, cumbersome, expensive, and totally impracticable.

The considerations leading to the adoption of the now established routine for Army bacteriological examinations in Victoria have been detailed in the preliminary report. The procedure, which may be briefly restated, requires that

¹ A report to the Director-General of Medical Services and the National Health and Medical Research Council of Australia.

the men shall report at the laboratory at 9 a.m., and refrain from taking food or drink after 10 p.m. of the evening preceding the appointment. Each man is given an opportunity to expectorate sputum, and if he is able to furnish a sample which can be approved as genuine bronchial mucus, such is accepted as fulfilling all requirements. If the recruit is unable to produce any sputum, or provides a salivary and unsatisfactory specimen, a sample of the content of the fasting stomach is secured by means of the Rehfuß tube.

Bacteriological Diagnosis from the Gastric Content.

In planning the work from the laboratory aspect, it was anticipated that many of these apparently healthy young men would have neither cough nor sputum, and from the outset provision was made for the utilization of the resting content of the stomach in the absence of acceptable sputum. A first survey of results to be presented in detail at a later stage shows that the routine of direct microscopic search and cultivation when such was unproductive was applied to samples of sputum from 684 individuals as against 864 for whom identical measures were directed to the gastric content. That the examinations of gastric mucus exceeded those of sputum by a substantial majority does not indicate any predilection for the gastric content as the better bacteriological approach. The rationale underlying resort to the gastric content assumes that tubercle bacilli are conveyed to the stomach from an unhealed pulmonary lesion in bronchial mucus which is brought to the pharynx and swallowed. Bronchial secretion may reach the pharynx as the result of coughing or by the action of the cilia of the tracheo-bronchial epithelium; in larger amounts mucus or muco-pus of bronchial origin may be expectorated by adults, but it is commonly swallowed. In small quantities, imperceptibly secreted, it may be transferred from the respiratory to the alimentary system by the process known colloquially as "clearing the throat".

It follows from these considerations that mucus aspirated from the fasting stomach can have no advantage over genuine sputum; its value is determined solely by the amount of bronchial mucus, that is, sputum, which it contains, and there can be no guarantee that at least some of the muco-purulent matter often apparent in gastric content has not made the descent from the posterior nares. Bacteriological exploration of the gastric mucus is none the less an invaluable, indeed indispensable, diagnostic procedure in dealing with persons who can submit no sputum, as is evident from the fact that of 59 young women, enlisting in one or other of the women's services and referred for bacteriological examination as radiologically suspect in the matter of pulmonary tuberculosis, not one could furnish any sputum. Cultivation from the content of the fasting stomach resulted in the recovery of *Mycobacterium tuberculosis* from 20 of the 59 young women in the group. Gastric content is undoubtedly to be preferred to sputum of doubtful quality, and many salivary and unsatisfactory samples, advanced as sputum, have been rejected. A factor contributing to the prominence assumed by the gastric content in the bacteriological work was that many men, according to their own statements, had dislodged their "morning phlegm" before arrival at the laboratory. If, as was probable, some or all of this secretion had been swallowed, it was recoverable by means of the Rehfuß tube.

Bacteriological Standards.

The criteria formulated for the identification of *Mycobacterium tuberculosis* and observed in the first year of the investigation may be briefly recapitulated. Acid-fast bacilli discovered by direct microscopic examination of smears of sputum, or cultivated from the sputum of men whose pulmonary lesions were assessed radiologically as "active", were accepted as *Mycobacterium tuberculosis*. In every case in which an acid-fast bacillus was recovered by culture from the gastric mucus, irrespective of the character of the radiological report, the virulence of the culture for the guinea-pig was determined. Similarly acid-fast bacilli cultivated from the sputum of men with regard to whom X-ray findings were interpreted as indicative of

old, healed, inactive or doubtful tuberculosis, were required to prove their capacity to induce fatal tuberculosis in the guinea-pig.

As the work gathered momentum and the number of examinations advanced from 322 for the year 1940, to 491 for 1941, and 817 for 1942, the resulting pressure rendered it impossible to maintain the rigid standard of virulence tests observed in the first year for all cultures of acid-fast bacilli recovered from the gastric content. As with cultures from sputum, acid-fast bacilli conforming in cultural characters to *Mycobacterium tuberculosis* when derived from the gastric mucus of men in whom the radiological evidence of pulmonary tuberculosis was definite, were accepted as tubercle bacilli and reported as such. Virulence tests are still provided in special circumstances, particularly when the cultural characters of the acid-fast bacillus are anomalous, or on request should the bacteriological finding be at variance with the clinical and radiological estimates of any given soldier; they are not, however, matters of routine, nor do I consider them necessary in the daily round and average case.

A routine laboratory diagnosis of tuberculosis based on cultural methods to the exclusion of animal inoculation may be criticized legitimately on the ground of the existence and occasional intrusion into cultures of acid-fast bacilli other than mammalian tubercle bacilli. Such micro-organisms are of widespread distribution and varied habitat, and the familiar association of acid-fast saprophytes with butter and milk suggests the likelihood of meeting them in the cultivation of tubercle bacilli from the gastric content. Interesting studies of acid-fast bacilli other than mammalian tubercle bacilli isolated from diseased tissue in man are those of Arnold Branch⁽⁴⁾ and Max Pinner.⁽⁵⁾ It has been the experience of Pinner, in his intensive cultivation of *Mycobacterium tuberculosis* at the Desert Sanatorium and Institute of Research, Tucson, Arizona, that the proportion of culture tubes prepared for *Mycobacterium tuberculosis* in which chromogenic acid-fast saprophytic bacilli have appeared is "much less than one per cent. of the total". The cultural characteristics of the majority of these bacteria are such as should cause their identity as *Mycobacterium tuberculosis* to be questioned immediately by a worker experienced in the cultivation of tubercle bacilli. Relatively rapid growth on comparatively simple media, considerable latitude with respect to temperature of incubation, and the development of smooth, hemispherical or dome-shaped colonies, prone to bizarre pigmentation and readily amenable to emulsification, are properties which distinguish the saprophytic acid-fast bacilli and contrast with the slow evolution of the papillary or "bread-crumbs", friable, non-emulsifiable colonies of *Mycobacterium tuberculosis*.

In the course of 1,009 attempted cultivations of *Mycobacterium tuberculosis* from the gastric content of adults, 864 of whom were recruits or members of the Services, acid-fast bacilli which deviated in their manner of growth from true tubercle bacilli appeared in only eight culture tubes. Two were of the smooth, moist, deeply pigmented type and grew with relative rapidity, but the remaining six were of slower growth and displayed colonies which, although questionable, were less strikingly divergent from those of *Mycobacterium tuberculosis*. Three of these strains, perforce neglected owing to pressure of work, were lost, but a detailed study of the other three, all of which were shown to be avirulent, I have reported elsewhere.⁽⁶⁾

Valuable work with a direct bearing on the question under discussion, namely, whether acid-fast bacilli of the requisite cultural characters recovered from the gastric content may be accepted as genuine tubercle bacilli, has been initiated by Phyllis Anderson⁽⁷⁾ in the Department of Bacteriology of the University of Sydney. In an interim report to the National Health and Medical Research Council, Dr. Anderson stated that at the time of writing, cultivations directed towards the recovery of *Mycobacterium tuberculosis* had been made from material provided by 266 recruits attending the Chest Board, Eastern Command. In the majority of instances the material submitted was the product of gastric lavage. Uniformly negative results were obtained in the case of 111 men, 62

of whom were considered to be free of pulmonary disease, and 49 to display intrathoracic lesions other than pulmonary tuberculosis. *Mycobacterium tuberculosis* was cultivated in the main from the gastric content, in the case of 51 of 155 men, regarded as subjects of pulmonary tuberculosis. All strains recovered were shown to be genuine tubercle bacilli by virulence tests in the guinea-pig. No pigmented non-pathogenic acid-fast bacillus appeared in the course of the cultural work relating to the 266 men—a fact which supports the contention that acid-fast saprophytes are not a serious source of error.

In 97 attempted cultivations of *Mycobacterium tuberculosis* from the gastric content of children I have only once encountered an acid-fast, chromogenic saprophyte; this microorganism, of facile growth and deeply pigmented colonies, bore little cultural resemblance to *Mycobacterium tuberculosis* and was promptly discarded as not worth the sacrifice of a guinea-pig. From the gastric content of children I have recovered 28 cultures identified as *Mycobacterium tuberculosis* on the characters of the growths and in every instance the finding has been confirmed by post-mortem evidence within a short period, guinea-pig inoculation, or a clinical course which precluded all reasonable doubt.

I have considered the risks of error in bacteriological diagnosis of pulmonary tuberculosis by cultural methods applied to the gastric content at some length because the questions of the authenticity of the cultures, and the possibility of tubercle bacilli gaining access to the stomach from sources other than pulmonary disease, have been raised and have occasioned much discussion. There can be no doubt that in the vast majority of instances the presence of tubercle bacilli in the gastric mucus may be correctly assigned to a parenchymal pulmonary lesion. In children the content of a caseating mediastinal lymphatic gland may be discharged into the tracheo-bronchial system, or even directly into the oesophagus. It has been my experience to have cultivated *Mycobacterium tuberculosis* from the exudate of tuberculous otitis media and mastoiditis in both children and adults; such lesions may discharge tubercle bacilli into the pharynx, as may also tuberculous processes in the tonsils. Tuberculosis of the gastric mucosa itself is so rare that it may be said not to operate as a confusing factor in the diagnosis of pulmonary tuberculosis by causing tubercle bacilli to appear in the gastric content. That tubercle bacilli should be introduced into the stomach with food, other than milk or milk products, is a very remote contingency, for as far as is known tubercle bacilli do not multiply naturally outside the animal body. Milk-borne bacilli would, of course, be of bovine type, but it can be positively stated that all of the 192 cultures of *Mycobacterium tuberculosis* recovered from gastric content in the course of this investigation have been essentially of human type and none has given the slightest suggestion of bovine origin.

Presentation of Results.

In the total of 1,630 individuals examined, 1,366 were drawn from the Australian Military Forces in Victoria, and 32 from personnel offering as recruits for the Royal Australian Navy. The several women's services contributed 59 subjects for examination, and 173 were derived from the Royal Australian Air Force, either as rejected recruits or patients of Number 2 Royal Australian Air Force Hospital. Close scrutiny of the radiological reports and clinical histories indicated that 82 of the persons examined might properly be eliminated as frankly non-tuberculous; their radiograms had been challenged, but on grounds other than that of pulmonary tuberculosis. More than half of these (51) were sent along in error in the initial stages of the work in 1940, and the remaining 31 appeared at intervals during a period of two and a half years, either as the result of confusion on the part of some non-commissioned officer or the disposition of a medical officer to draw a bow at a venture. If 82 be therefore deducted from the gross total of 1,630, the resulting figure of 1,548 represents the number of bacteriological examinations carried out for recruits suspected of pulmonary tuberculosis on radiographic evidence. Of the 1,548 persons

investigated, 364 were shown to be discharging tubercle bacilli. The over-all proportion of positive findings is thus 23.7%, but as this figure was determined in a series of patients whose radiograms were indicative of all degrees of activity, apparent healing and doubtful diagnosis, a much closer analysis is necessary in order to assess the efficacy of the bacteriological measures adopted. Such analysis will perhaps be presented to better advantage subsequent to a statement of the methods by which the positive bacteriological findings were recorded (see Table I).

TABLE I.
Manner in which Positive Bacteriological Findings were Obtained.

Method.	Number.
By direct microscopy of smears of sputum	65
By cultivation from specimens of sputum in which no acid-fast bacilli could be detected by microscopic search ..	107
By microscopic search of smears of gastric content ..	19
By cultivation from the concentrate of the resting content of the stomach	173
Total	364

The application of cultural methods and the exploitation of the gastric content as a reservoir of tubercle bacilli have therefore resulted in 364 positive findings as against 65, which would have been the number had the examinations been restricted to smears of sputum.

It will be noted that there is a conspicuous difference between the number of positive findings determined by direct microscopic examination of smears of sputum (65) and that obtained by cultivation from the sputum (107). With respect to gastric content, the majority held by positive findings based on cultivation (173) over those determined on direct smear preparations (19) is overwhelming. The inadequacy of the film method is demonstrated in both series, and it is perhaps not surprising that it failed so badly in the examination of gastric content. The resting content of the stomach of a patient who does not secrete enough bronchial mucus to excite cough and expectoration can scarcely be expected to carry tubercle bacilli in number sufficient to enable their detection in a direct Ziehl-Neelsen preparation as frequently as does sputum. The number of tubercle bacilli requisite for their discovery by microscopic search has been computed by H. J. Corper⁽²⁾ as 100,000 per cubic centimetre, but this much quoted figure has been challenged by Bogen and Bennett⁽³⁾ as unduly pessimistic. Basing their calculation upon experience in Gaffky counts and the assumption that a careful worker will examine at least 300 microscopic fields before issuing a "negative" report, Bogen and Bennett estimate that the presence of 1,000 microorganisms per cubic centimetre should permit of the detection of tubercle bacilli by direct microscopic examination. Wherever the truth may lie between these two standards, it is certain that cultivation frequently reveals the presence of tubercle bacilli when repeated, patient and conscientious search of films leaves no alternative but to record a negative finding.

In the Army bacteriological examinations it has been routine practice to make the Ziehl-Neelsen preparation for direct microscopy from the concentrate as prepared for the inoculation of culture media, and to subject the film to microscopic search for a minimum period of fifteen minutes. The poor showing of the film method as compared with cultivation is not to be attributed to hurried or inadequate scrutiny. Considerations of economy of effort, culture medium and incubator space, and the possibility of summary disposal of the specimen with an immediate positive report were strong inducements to persevere in the search for acid-fast bacilli in the films.

The total of positive bacteriological findings recorded (364) is of necessity an underestimate. Both the magnitude of the undertaking and the necessity for working within Army requirements for prompt disposal of the men, precluded, in the great majority of instances, more than one attempt to adduce bacteriological confirma-

tion of X-ray diagnosis of pulmonary tuberculosis. A number of men, however, have been referred for a second examination, a few have sought it of their own volition at varying intervals after discharge from the Army, and thus opportunities have arisen for repetition of the bacteriological examination with respect to 25 men. Five soldiers for whom the first report had been in the negative yielded tubercle bacilli at the second examination; in two cases the former positive finding was confirmed, and in the case of one man whose gastric content provided cultures of *Mycobacterium tuberculosis* in January, 1942, the positive finding was reversed in August, 1942, and reaffirmed in January, 1943. In eleven of the repeat examinations the culturally negative findings were confirmed by the second examination, and in another group, six men who had furnished sparse growths of tubercle bacilli in their first examination attained negative findings on the second occasion. Such vagaries are to be expected when tubercle bacilli are being eliminated in small numbers and probably intermittently; the laboratory worker finds them here today and gone tomorrow, and the rule governing so many of his procedures, that while a positive finding is of material assistance a negative result is not of comparable significance, is preeminently applicable in the bacteriological diagnosis of tuberculosis.

Correlation of Radiological and Bacteriological Findings.

It is laid down as routine procedure in the thoracic radiography of the Australian Military Forces that every man concerning whom suspicion is raised by the miniature screen photograph, shall be reexamined by the standard 14 by 17 inch radiogram. The following correlation of radiological and bacteriological findings is based upon reports issued as interpreting the large films. In any attempt to estimate the efficacy of the bacteriological methods employed the results obtained should be considered in relation to the clarity of the diagnosis and the degree of activity of the tuberculous process as assessed radiologically. For this purpose five groups may be defined, as follow.

Group I.

In a group of 505 recruits, comprised of 481 men and 24 women, the radiological reports regarding whom indicated the presence of active pulmonary disease, the number of positive bacteriological findings was 272 or 53.8%. In all the members of this group the lesions disclosed were such as to influence the radiological boards to recommend the rejection of the recruit.

Group II.

In a second group of 237 recruits, 223 of whom were men and 14 women, the terms of the radiological reports suggested that although the diagnosis of pulmonary tuberculosis was not in question, some difficulty was experienced in formulating an opinion regarding activity of the disease. Addenda to the X-ray reports of the personnel in this group suggested bacteriological examination and subsequent consideration by a medical board. The number of positive findings in this series of 237 examinations was 34 or 14.3%.

Group III.

In the third group are to be placed 374 individuals, 359 men and 15 women, for all of whom the radiological diagnosis was pulmonary tuberculosis, old, healed or inactive. Twenty-one persons (5.6%) among the 374 in whom the disease was estimated radiologically as healed, or at least quiescent, furnished positive bacteriological findings, six by cultivation of *Mycobacterium tuberculosis* from the sputum and fifteen by cultivation from the gastric content.

Group IV.

Group IVA.—In a fourth group are to be considered first 162 Army recruits, the reports concerning whom suggested that radiological diagnosis was inconclusive as between tuberculosis on the one hand and such conditions as "recent pneumonitis" or delayed resolution of an acute process on the other. Included also are a number of men whose X-ray reports were framed in terms of "suspicious infiltration", "doubtful markings" and "vague mottlings". In all there were 21 positive findings in this division, five by direct microscopy of sputum, five by cultivation from the sputum, one by the detection of acid-fast bacilli subsequently confirmed as tubercle bacilli in a smear from the deposit of the gastric content, and ten by cultivation from the gastric mucus. In 21 instances in which bacteriological examination was recommended to determine the issue as between tuberculous infiltration and recent pneumonitis, three positive findings were recorded, two by microscopic search of smears of sputum and one by culture from the sputum.

Group IVB.—In a further 62 men in Group IV of doubtful diagnosis, the general tenor of the reports was to the effect that although tuberculosis could not be excluded, it was an improbable diagnosis. The radiograms were held to be more suggestive of conditions such as pneumokoniosis, bronchiectasis, pneumothorax, cystic disease of the lung, and pulmonary neoplasm. In one instance monilliasis, and in another Boeck's sarcoid were regarded as the most likely diagnoses on radiological grounds. Exaggerated broncho-vascular markings and varying degrees of peribronchial fibrosis combined with the foregoing to comprise this subgroup of 62 men, in none among whom was there a positive bacteriological finding. In the entire group of 224 men, of dubious pulmonary pathological change as indicated by their radiograms, positive bacteriological findings were recorded for 21 or 9.3%.

Table II summarizes the above consideration of bacteriological results in relation to activity of pulmonary tuberculosis as estimated radiologically.

Group V.

Four men, three soldiers and one airman, each of whom was shown to be discharging tubercle bacilli, are to be placed in a fifth group, by reason of the fact that their thoracic radiograms were passed as affording no evidence of pulmonary tuberculosis. *Mycobacterium tuberculosis* was cultivated from the gastric content of one of these men and from the sputum of each of the other three, the identity of all four cultures being confirmed by guinea-pig inoculation. The details relating to the men in this interesting group are perhaps most concisely presented in tabular form (see Table III).

TABLE II.
Bacteriological Results in Relation to Radiological Estimation of Activity.

X Ray Diagnosis.	Positive Findings.				Negative Findings.		Total.	Total Positive.	Percentage Positive.
	S.S.	S.C.	G.S.	G.C.	S.C.	G.C.			
I. Active pulmonary tuberculosis	58	80	16	118	121	112	505	272	53.8
II. Pulmonary tuberculosis of doubtful activity	1	10	2	21	71	132	237	34	14.3
III. Pulmonary tuberculosis, old, healed or inactive	—	6	—	15	130	223	374	21	5.6
IV. Doubtfully tuberculous	5	5	1	10	98	105	224	21	9.3

¹ S.S.—smear of sputum; G.S.—gastric smear; S.C.—sputum culture; G.C.—gastric culture.

TABLE III.
Recovery of *Mycobacterium Tuberculosis* from Sputum and Gastric Content in the Absence of Radiographic Signs of Pulmonary Tuberculosis.

Serial Number.	Date.	X-ray Report.	Bacteriological Report.	History.
238	24.9.40	Lungs clear. Pass.	Positive sputum culture.	Father died of pulmonary tuberculosis twelve months ago. Two cousins formerly in sanatoria.
253	26.9.40	Pass.	Positive sputum culture on two occasions.	Pleurisy four months ago. Brother rejected as subject of active pulmonary tuberculosis.
255	27.9.40	No sign of tuberculosis. Pass.	Positive gastric culture.	No suggestive facts in personal or family history.
A38	31.1.41	Infiltration in left mid-lung; probably non-tuberculous. Reexamine in few weeks.	Positive sputum culture.	Cough and expectoration for three weeks.
	28.2.41	No definitely abnormal features observed in lungs.		Family history clear.
	2.4.41	Condition resolved. No X-ray evidence of tuberculosis.	Positive sputum culture.	

It was ascertained that Number 253 was sent for examination in mistake for his brother, and that Number 238 and Number 255 presented themselves in the laboratory must also have been accidental in view of the X-ray reports with regard to them.

Number 238 subsequently attended the Chest Clinic in Geelong, and for information concerning his progress I am indebted to Dr. George Cole. The radiologist's report of February 10, 1941, four and a half months after the patient's discharge from the Army, recorded accentuation of the left hilar shadow and the presence of several soft drainage pedicles leading from the subapical region of the left lung to the hilum. Poor illumination of the left pulmonary apex on deep inspiration was noted, and the appearances were regarded as indicative of a probably active tuberculous lesion in this situation. On June 15, 1942, Dr. Cole advised me that he had again had this ex-soldier under observation. His health had been uniformly good, except for occasional colds, and he had sustained his work as a driver. A radiogram of June 11, 1942, read in comparison with that of February 10, 1941, indicated that the pathological process formerly evident in the apical portion of the left lung had resolved and the later film was recorded as normal except for some thickening of hilar shadows.

With reference to Number 253 I have learned from the consulting physician, whose advice he sought after his release from the Army, that no lesion of pulmonary tuberculosis could be located in the standard thoracic radiogram of private practice. This man is known to be well and engaged actively in business, but he has not reported for periodical X-ray examinations as advised.

There appears to be no information to be gleaned regarding the subsequent course of Number 255, all efforts to trace him having been unsuccessful.

Number A38 reappeared in December, 1941, and requested a further bacteriological examination, which, in the absence of sputum, was carried out by attempted cultivation of *Mycobacterium tuberculosis* from the gastric content. All three culture tubes prepared remained sterile throughout an adequate period of incubation.

With regard to the situation in which tubercle bacilli are recoverable from sputum or gastric content in the absence of radiographic signs of pulmonary disease, the only explanation apart from tracheo-bronchial or "bronchoscopic" tuberculosis that one not well versed in radiology can advance, is that the source of the bacilli is a small but active focus located in a poorly illuminated corner of the lung, for example, such as falls within the cardiac shadow. Although more difficult to accept, another solution of the seeming paradox would be the sojourn of tubercle bacilli in the lung in a commensal capacity with their wonted pathogenic propensity in abeyance. No doubt many will reject this suggestion as too imaginative, but it may be something more than phantasy, as will appear from certain observations of Ople and Aronson introduced at a later stage in a consideration of the question of tubercle bacillus "carriers".

Radiological Estimation of Activity.

The radiological appraisalment of the degree of activity inherent in a tuberculous pulmonary lesion has been a subject of much debate. One principle which has crystallized from the discussion is that, more often than not, activity, quiescence, recession, or healing in the tuberculous

process cannot be assessed radiologically from the evidence afforded by a single film, and that an opinion of this nature should be based on observations over an adequate period by means of serial radiograms. Another fact which has emerged is that even when the foregoing condition is fulfilled, and nothing is lacking in technical procedure, or care and experience on the part of the observer, radiology is not without its limitations, particularly in the decision that a focus of tuberculous pulmonary disease is inactive or healed. Hence it follows that opinions regarding activity expressed in the reports of the radiological boards, apart from those relative to films exhibiting gross disease, are to a varying extent tentative, and qualified by the limit of a single examination.

The exigencies of the situation in which mass radiography of recruits for the Army was instituted did not permit of delay in decision and protracted study of serial radiograms, and it is in this light that the correlation of radiological and bacteriological findings is to be considered. Reference to Table II shows a broad correspondence between the radiological estimation and bacteriological determination of activity in that the proportion of positive bacteriological findings is very high—53.8%—in the radiologically active group, and declines through 14.3% in the intermediate group of doubtful activity, to 5.6% in the group comprising those men in whom the radiographic signs suggested an old, inactive, or healed process. The figures show that much has been accomplished by the radiological boards in the direction of elucidation of the all-important question of activity or quiescence of pulmonary tuberculosis, and when it is remembered that in the vast majority of instances the reports were based on a single, flat, postero-anterior film, without benefit of lateral views, tomography, or other refinement, it will be agreed that a high degree of accuracy has been attained in the mass radiography. At the same time, the figures in Groups II, III and IV of Table II, and also the fact that it was possible to define a group such as Group V, indicate the limitations of radiology and the necessity for bacteriological control in radiological diagnosis of pulmonary tuberculosis.

It is particularly in relation to healing of a tuberculous process in the lung that a positive and emphatic statement, dictum of physician, radiologist, or pathologist, is never justified. Many researches have shown that a high proportion of apparently old, dry-caseous and calcified pulmonary foci and lymphatic glands harbour viable and virulent tubercle bacilli. In an exhaustive study of latent, unsuspected and even apparently healed tuberculous foci in the lungs and tracheo-bronchial glands of 169 subjects who had died from causes other than pulmonary tuberculosis, Ople and Aronson⁽¹⁰⁾ demonstrated that the material derived from such foci induced tuberculosis in guinea-pigs in 30% of cases. Among the lesions investigated were fibrous apical scars, to all appearance soundly healed, and indeed showing no microscopic evidence of persisting tuberculosis; approximately one-fourth of such scars were proved to contain living tubercle bacilli. Fibro-caseous lesions of the pulmonary apex, unsuspected clinically, and discovered incidentally in routine autopsy work, in most instances accommodated virulent tubercle bacilli. It would

appear therefore that even the pathologist, in his position of advantage, cannot determine healing of tuberculous lesions in the sense that no viable tubercle bacilli remain, without recourse to bacteriological methods. A realization of the frequent failure to attain what might be termed academic healing should not precipitate pessimism in prognosis; the very subjects of Ople and Aronson's observations established a *modus vivendi* with the tubercle bacillus and eventually died of other causes.

Tubercle Bacillus Carriers.

In the work to which reference has been made, Ople and Aronson also examined by guinea-pig inoculation portions of pulmonary tissue and tracheo-bronchial glands in which no tuberculous lesion was apparent to macroscopic inspection or histological study. Pieces of tissue selected for their lack of morbid change were taken from the pulmonary apex, the base of the lung and the tracheo-bronchial glands; living tubercle bacilli were found in one or more of the apparently normal tissues in 15 out of 33 autopsies so conducted. It is true that in most instances in which Ople and Aronson demonstrated tubercle bacilli in pulmonary or bronchial glandular tissue which was free from tuberculous lesions, indications of old, unsuspected, and as related to the cause of death, incidental tuberculosis were found in other regions of the lung. In three cases the tuberculous process was fibro-caseous disease of the pulmonary apex; in three the process was a fibrous scar of the apex; in seven encapsulated caseous or calcified foci were present in the lungs; while in two instances the lesion was inconspicuous and of doubtful nature, consisting in nothing more than a fibrous scar of the apical pleura. Such observations suggest that *Mycobacterium tuberculosis* may maintain a vegetative existence in pulmonary tissue which is apparently normal and devoid of tissue reaction in microscopic sections, thereby constituting the individual concerned a "carrier" in the usual sense of the term as applied to persons harbouring meningococci, diphtheria bacilli and typhoid bacilli. Whether such a "carrier" would be capable of transmitting tubercle bacilli to members of his family or other close associates in numbers sufficient to induce manifest tuberculosis in one or more of them, is a possibility which for the present must remain speculative. There is nothing hypothetical, however, about the subject of active or latent tuberculosis of the lung, who is a "carrier" in the sense that he is unaware of his affection and under no disability therefrom. No less than 189 of the 364 persons shown to be eliminating tubercle bacilli in the present investigation protested that they were perfectly well and maintained negative replies to all questions designed to elicit suggestive facts in their personal and family histories. The radiological findings with respect to the 189 men in question ranged from definite pronouncements of active and sometimes extensive disease to reports of small and apparently innocuous calcified foci (Group III), or even a pass for lack of radiographic signs of pulmonary disease (Group V). The reports of the radiological boards concerning the men whom I have placed in Group III were not such as to suggest infectivity, as will be seen from the following examples; none the less 21 of 374 men in the group were shown to be discharging tubercle bacilli.

The infectivity of a person who has no cough and from whom tubercle bacilli have been recovered by culture from the gastric mucus would not appear to be of the same order as that attaching to a patient who secretes large amounts of bacilliferous sputum and propagates infection with a propulsive cough. Yet the tuberculous subject who normally does not cough is exceptionally fortunate if he does not contract a share of seasonal respiratory tract infections with their attendant coughing. Two recruits who passed through the laboratory in the course of this investigation, neither of whom could produce any sputum, were found to have played the part of "carrier" each within his own household.

The first, Number 205, from whom *Mycobacterium tuberculosis* was recovered from the gastric content, stated that his little boy had died of meningitis in the Children's Hospital eleven months previously. The

TABLE IV.
Examples from Group III.

Serial Number.	Radiological Report.	Bacteriological Report.
37	Scattered calcification; right apex.	Positive gastric culture; induced fatal tuberculosis in guinea-pig.
167	Small calcified nodules in apex of left upper lobe. No evidence of activity and remainder of lungs normal.	Positive sputum culture; virulent to guinea-pig.
225	Small calcified nodules at left apex. No definite evidence of activity.	Positive sputum culture; virulent to guinea-pig.
497	Scarring at left apex. Bacteriological examination.	Positive gastric culture; virulent to guinea-pig.
809	Tuberculous scarring at left apex; vague nodules right upper lobe. Bacteriological examination.	Positive gastric culture; virulent to guinea-pig.

autopsy records showed that the child had died of tuberculous meningitis. In November, 1942, a boy, aged two years, was admitted to the Children's Hospital, where he died four months later of disseminated tuberculosis, having provided cultures of *Mycobacterium tuberculosis* from his gastric content in the meantime. It was not difficult to establish from the hospital records that this child was the son of a soldier, Number 750, who had been referred for examination on January 21, 1942. *Mycobacterium tuberculosis* was cultivated from a specimen of the father's gastric content, secured on that occasion.

Conclusion.

It is submitted that the results of the concurrent bacteriological examinations establish beyond question the wisdom and foresight of the policy which instituted the radiological survey of the Australian Military Forces, and confirm the efficacy of miniature screen photography for the purpose. The bacteriological routine adopted, although sufficiently laborious, is presented as the minimum compatible with efficiency. Unfortunately it entails delay in the disposal of recruits, for while positive findings are generally determined in an average period of 21 to 28 days, a negative report cannot safely be issued until culture tubes have emerged sterile from at least six weeks' incubation. It can be readily understood that the time lag may embarrass Army administration and result in serious inconvenience, amounting even to hardship, for certain recruits. For this reason many decisions with respect to recruits suspected of pulmonary tuberculosis have been made by medical boards on clinical and radiological evidence; men and women so discharged have been referred to the Central Tuberculosis Bureau, and the arrangements for bacteriological examination have been made by the Bureau. In this manner 536 out of 1,308 individuals examined during 1941 and 1942 have come within the bacteriological survey after their discharge from the Army or other of the Services; the number of positive findings among the 536 persons referred from the Central Tuberculosis Bureau was 152 or 28.3%—a figure which is appreciably higher than that already given as the over-all percentage of positive results, namely, 23.7.

Although in the nature of things an underestimate, the figure for the proportion of bacteriological confirmations of X-ray diagnosis is high, particularly in Group I, in which it reached 53.8% among 505 recruits designated radiologically as subjects of active pulmonary tuberculosis. That positive bacteriological findings were recorded in regard to 76 of a composite group of 835 recruits, concerning whom the radiological reports implied doubt as to diagnosis, or described the lesions of pulmonary tuberculosis as of doubtful activity, old, inactive or healed, is a feature of the results which in itself provides strong argument for the maintenance of bacteriological control in all such surveys.

The recovery of *Mycobacterium tuberculosis* would seem to be conclusive proof of the existence of an active, though not necessarily an advancing, lesion, and medical boards have been confronted with some difficult decisions by the return of such a finding for certain men of excellent physique and abounding vigour. The familiar post-mortem observation of unsuspected fibro-caseous and calcareous

apical tuberculosis in persons who have lived an average span and died of causes other than tuberculosis, indicates that in pulmonary disease the tuberculous process may remain static for years, despite the presence within the lesions of viable and virulent tubercle bacilli. The extended application of combined radiological and bacteriological investigation will no doubt result in the detection of an ever-increasing proportion of those lesions of pulmonary tuberculosis which lie beyond the range of clinical perception, of a piece with those which furnished Naegeli's classic statistics,⁽¹⁾ and provided Opie⁽²⁾ with the observation that apical fibro-caseous and fibro-calcareous lesions were present in the lungs of 16 out of 74 persons who during life had manifested no evidence of pulmonary tuberculosis.

Acknowledgements.

The publication of this report is approved by the Director-General of Medical Services, Major-General S. R. Burston, and by the National Health and Medical Research Council of Australia. In its early stages the work was promoted by Major-General R. M. Downes, and throughout it has had the cordial cooperation of Colonel C. Gordon Shaw, Deputy Director of Medical Services, Victoria, Line of Communication Area. Other officers who have done much to facilitate the research are the late Lieutenant-Colonel E. L. Cooper, Lieutenant-Colonel H. Hume Turnbull, Lieutenant-Colonel L. M. Routh, Lieutenant-Colonel Douglas Galbraith and Major N. T. Bull. As officer-in-charge of the X-ray Department, Major Bull has maintained a happy liaison between the radiological and bacteriological laboratories. The work has been conducted throughout in close association with the Central Tuberculosis Bureau and I have been greatly assisted by Dr. J. Bell Ferguson, State Director of Tuberculosis in Victoria, and Dr. H. Maxwell James, Clinical Tuberculosis Officer at the Bureau, who have ensured that all rejected recruits appearing at the Bureau have been referred for bacteriological examination. Capable and untiring support has been maintained since the inception of the work by my technical assistant, Mr. H. Weir, who has kept me supplied with large quantities of culture medium, performed the majority of the gastric aspirations, examined with exemplary patience seemingly endless Ziehl-Neelsen preparations, and assumed a considerable share of the clerical work.

References.

- (1) R. Webster: "Bacteriological Examinations Supplementing the Radiological Survey of the Australian Imperial Force: Preliminary Report", *British Medical Journal*, May 10, 1941, page 701.
- (2) R. Webster: "Studies in Tuberculosis: I. The Efficacy of Cultural Methods in the Diagnosis of Tuberculosis", *THE MEDICAL JOURNAL OF AUSTRALIA*, May 21, 1941, page 661.
- (3) G. S. Wilson: "Tuberculous Bacillæmia", Medical Research Council of the Privy Council, Special Report Series Number 182, 1933, page 92.
- (4) Arnold Branch: "A Study of Acid-Fast Organisms other than Mammalian Tubercle Bacilli Isolated from Disease in Man", *Tubercle*, Volume XIV, 1932-33, page 337.
- (5) Max Pinner: "Chromogenic Acid-Fast Bacilli from Human Beings", *American Review of Tuberculosis*, Volume XXXII, 1935, page 424.
- (6) R. Webster: "Studies in Tuberculosis: IV. Bacteriological Diagnosis from the Gastric Content", *THE MEDICAL JOURNAL OF AUSTRALIA*, November 22, 1941, page 583.
- (7) Phyllis Anderson: "Methods of Detecting Acid-Fast Bacilli in Pathological Material: Report upon the Work done under the Medical Research Endowment Act during the year 1941", page 5.
- (8) H. J. Corper: "The Certified Diagnosis of Tuberculosis", *The Journal of the American Medical Association*, Volume XCI, 1928, page 371.
- (9) E. Borgen and E. S. Bennett: "Tubercle Bacilli in Sputum", *American Review of Tuberculosis*, Volume XXXIX, 1939, page 89.
- (10) E. L. Opie and J. D. Aronson: "Tubercle Bacilli in Latent Tuberculous Lesions and in Lung Tissue without Tuberculous Lesions", *Archives of Pathology and Laboratory Medicine*, Volume IV, July, 1927, page 1.
- (11) W. W. C. Topley and G. S. Wilson: "The Principles of Bacteriology and Immunity", Second Edition, 1936, page 1020.
- (12) E. L. Opie: "Pathological Evidence of First Infection in Association with Active Pulmonary Tuberculosis", *American Review of Tuberculosis*, Volume X, 1924, page 249.

Reports of Cases.

AMEBIC DYSENTERY IN THE NORTHERN TERRITORY.

By H. B. FAY,

Major, Australian Army Medical Corps,

AND

C. A. W. JOHNSTON,

Captain, Australian Army Medical Corps.

DURING the three months from October, 1942, to January, 1943, seven patients suffering from amebic dysentery were admitted to a military hospital in Australia. Of these, only two had been outside Australia, one of whom had served in the Middle East. Three of these patients came from the same unit, and it seems probable that they contracted the disease in the one camp. This area is now under observation, and an endeavour is being made to detect carriers. The cases are presented in the sequence in which they occurred.

Case I.

Lieutenant B., aged thirty-nine years, was admitted to hospital on November 12, 1942. He had visited England and America in 1929, but had had no illness during the trip. He had had an appendicectomy performed in 1934. The patient had worked in New South Wales until he was drafted to the Northern Territory in May, 1942. In June, 1942, he had had a mild attack of diarrhoea without mucus or blood in the stools, and since that time he had had anorexia and epigastric discomfort, which never completely responded to treatment. He was admitted to hospital in September, 1942, for investigation of anorexia and loss of weight. On examination, the liver was palpable one finger's breadth below the right costal margin. X-ray examination after a barium meal revealed no abnormality, and in several examinations of the faeces no parasites were detected. He was discharged from hospital, but never felt really well, and two weeks before his readmission he developed diarrhoea, again associated with mild epigastric discomfort. The diarrhoea persisted, and was associated with the passage of mucus but no blood.

On his admission to hospital, the patient's temperature was 99° F., his pulse rate was 88 per minute and his respirations numbered 18 per minute. His complexion was pale. On examination of the abdomen, no mass or viscus was palpable, and there was no tenderness. Examination of the stools revealed fairly numerous trophozoites of *Entamoeba histolytica*. A sigmoidoscopic examination revealed that the bowel mucosa was hyperæmic and oedematous and bled easily. There were a few small scattered ulcers with undermined edges and sloughing bases. Inspection of scrapings from the ulcers revealed abundant trophozoites of *Entamoeba histolytica*. The patient was given routine treatment with emetine, "Carbarsone" and "Yatren" retention enemata. A further sigmoidoscopic examination on December 11 revealed great improvement. There were no ulcers, but the bowel mucosa was still mildly hyperæmic. Cysts of *Entamoeba histolytica* were detected in the faeces. On December 16 a full course of treatment with emetine bismuth iodide was commenced and completed on December 25. Sigmoidoscopic examination on December 28 revealed normal bowel mucosa. On further examination of the stools, no parasites or cysts were detected.

Case II.

Mr. M., aged twenty-two years, was admitted to hospital on December 10, 1942. He had lived in New South Wales and had been employed on water construction work. On a convoy trip to the Northern Territory in May, 1942, he had a mild attack of diarrhoea, lasting one day. One month prior to his admission to hospital he complained of the passage of frequent fluid stools flecked with blood and mucus, and of central abdominal pain. The diarrhoea gradually subsided; but two weeks before his admission to hospital he began to have "cramps in the stomach", and the diarrhoea recurred, with the passage of "slime" and blood. The patient had had persistent anorexia, and lost weight during that period. On his admission to hospital, his

temperature was 95° F., his pulse rate was 60 per minute and his respirations numbered 18 per minute. The liver was not palpable, and no abdominal tenderness was present. At the second examination of stools, trophozoites of *Entamoeba histolytica* were detected in great abundance. On December 16, 1942, a sigmoidoscopic examination revealed numerous raised yellow areas in the bowel mucosa. There were a few small ulcers, with undermined edges and sloughing bases. The intervening mucosa was only mildly hyperæmic. After treatment with emetine, "Carbarsone" and "Yatren" retention enemata, a further sigmoidoscopic examination on January 17, 1943, revealed normal bowel mucosa, and on repeated examinations of the stools, no vegetative or encysted amœbe were detected.

Case III.

Sergeant H., aged twenty-six years, was admitted to hospital on January 4, 1943; he had lived at Mildura until his embarkation. He arrived in the Middle East in September, 1941, and was in Palestine and Egypt and returned to Australia in March, 1942. While at Tel-el-Kebir, he had one mild attack of diarrhoea lasting two days. He was drafted to the Northern Territory in October, 1942. He was quite well until ten days before his admission to hospital, when he had a mild attack of diarrhoea with the passage of six fluid stools a day; the attack was associated with nausea but no vomiting. After three days, his symptoms subsided. Three days later there was a recurrence of the diarrhoea, associated with abdominal colic and the passage of blood and mucus. On examination of the patient, the liver was not palpable; tenderness was present in the left iliac fossa, and the sigmoid colon appeared thickened. The stools were fluid and contained flecks of blood and glairy mucus; microscopic examination revealed numerous red blood cells, epithelial cells, a few pus cells, and fairly numerous trophozoites of *Entamoeba histolytica*. A sigmoidoscopic examination revealed that the mucosa was slightly hyperæmic, with scattered pin-point hæmorrhages. There were numerous raised yellowish areas about three millimetres in diameter, and a few small ulcers with indeterminate edges and yellowish sloughing bases. Routine therapy was employed, and a later sigmoidoscopic examination revealed normal bowel mucosa; no cysts or parasites were detected at repeated examinations of the stools.

Case IV.

Sapper M., aged twenty-one years, was admitted to hospital on January 21, 1943. He lived in Victoria and had never been out of Australia. He entered the Northern Territory in May, 1942, and for seven months prior to his admission to hospital he was stationed in one camp. He had been quite well for three months, when he developed mild diarrhoea lasting for three days. Since that time, he had had recurrent attacks of diarrhoea, without blood or mucus in the stools. He was treated in camp hospital for two weeks, and was much better for some time, but the diarrhoea recurred, and for the last six weeks he had had persistent diarrhoea with six to fifteen motions per day; occasionally he noticed blood and mucus in the stools. He experienced mild epigastric discomfort and occasional aching pain under the right costal margin. On his admission to hospital his temperature was 98.4° F., his pulse rate was 80 per minute and his respirations numbered 20 per minute. The liver was not palpable. Slight tenderness was present under the left costal margin, but there was no increase in the area of splenic dullness to percussion. The stools were fluid, and contained much glairy mucus. A microscopic examination revealed numerous red blood cells, *Trichomonas hominis* organisms, and fairly numerous trophozoites of *Entamoeba histolytica*. Routine treatment was carried out, and the patient became clinically well. Sigmoidoscopic examination revealed that the bowel mucosa appeared normal, but examination of the faeces on February 18, 1943, revealed encysted forms of *Entamoeba histolytica*, so a course of treatment with emetine bismuth iodide was commenced. On its completion, the stools were normal and no cysts were detected in them.

Case V.

Sapper S., aged twenty-seven years, was admitted to hospital on January 28, 1943. He had lived at Yarraglen, Victoria, and had never been out of Australia. He was drafted to the Northern Territory in May, 1942, and for the first seven months had been at the same camp as Sapper M. (Case IV). He was well until two months before his admission to hospital, when he commenced to have mild attacks of diarrhoea, which were, however, not severe enough

to make him report to the regimental aid post. Gradually the diarrhoea became worse, and was associated with lower abdominal pain. Three weeks prior to his admission to hospital, there was a pronounced increase in the severity of the attacks, and one week later he passed some blood and mucus. Since that time, he had passed mucus in all his stools. His appetite was poor, and he had lost a considerable amount of weight. On his admission to hospital, his temperature was 100.8° F., his pulse rate was 96 per minute and his respirations numbered 22 per minute. He was pale and had an anxious appearance. The tongue was furred. The abdominal wall was lax and doughy, and tenderness to palpation was elicited over the lower portion of the abdomen. The liver was not palpable. The spleen was easily palpated; it was firm and not tender. The stools were fluid, and contained a fair amount of glairy mucus, flecked with blood. Microscopic examination revealed numerous red blood cells and trophozoites of *Entamoeba histolytica*. A sigmoidoscopic examination revealed that the bowel mucosa was hyperæmic, and that numerous raised yellow areas, about five millimetres in diameter, were present. There were a few ulcers with sloughing yellow bases, which bled easily. Routine therapy was carried out, and later sigmoidoscopic examination revealed normal bowel mucosa. Encysted forms of *Entamoeba histolytica* were found in the faeces. A course of treatment with emetine bismuth iodide was given, following which the stools were normal.

Cases VI and VII.

The following two patients were admitted to hospital with a diagnosis of bacillary dysentery, and in each case organisms which did not ferment lactose were isolated from the stools. Both patients failed to respond adequately to treatment, and after repeated examinations of the stools, trophozoites of *Entamoeba histolytica* were found during a recurrence of diarrhoea.

Case VI.

A.C.I., aged twenty years, was admitted to hospital on October 28, 1942. He lived in Victoria, and had joined the Royal Australian Air Force in 1942. He had never been out of Australia, but had been in contact with troops who had returned from overseas. While stationed in New South Wales he developed gastro-enteritis, and was under observation in hospital for five weeks. After his discharge from hospital he was drafted to the Northern Territory, but he still had mild diarrhoea and aching pain in the right hypochondrium. Twelve hours before his admission to hospital, he developed severe diarrhoea and colicky abdominal pain; however, he noticed no blood or mucus in the stools.

On his admission to hospital, his temperature was 102° F., his pulse rate was 106 per minute and his respirations numbered 24 per minute. His tongue was furred. He was tender over the right iliac fossa. No abdominal masses were palpable. Two days after his admission to hospital he passed a stool containing blood and mucus. Microscopic examination of the stool revealed a typical bacillary exudate, and an organism which did not ferment lactose was isolated from the stool. This, however, gave the sugar reaction of *Bacterium dysenteriae*; but it was not agglutinated by the available types of antiserum. After two courses of saline therapy and a course of treatment with sulphaguanidine, this organism was still isolated. Sigmoidoscopic examination revealed granular proctitis without ulceration. The patient complained of pain over the ascending colon on December 9, 1942, and had an exacerbation of diarrhoea. Microscopic examination of the stool revealed numerous blood cells and trophozoites of *Entamoeba histolytica*. A sigmoidoscopic examination on December 10, 1942, revealed no change in the bowel mucosa. No ulceration was apparent. On the completion of the routine therapy the patient was well for four days; then the diarrhoea recurred. Trophozoites of *Entamoeba histolytica* were abundant in the stools. A second course of therapy was commenced on January 16, 1943. A sigmoidoscopic examination at this stage revealed some improvement in the bowel mucosa, but there was still evidence of granular proctitis. After the second course of therapy, the patient's condition was much improved.

Case VII.

Sapper P., aged twenty-six years, was admitted to hospital on October 19, 1942, with a history of diarrhoea of five weeks' duration, gradually becoming more severe, with the passage of blood and mucus at intervals. He had had diarrhoea for thirteen days before his admission to hospital and was treated at a camp hospital for five days. On his admission

to hospital, the patient was pyrexial. He had frequent motions with the passage of blood and mucus. That day he became icteric. The liver was palpable two fingers' breadth below the right costal margin and tender. Routine saline therapy was begun. The icterus gradually subsided. On October 23, 1942, the patient complained of pain in the right shoulder. On examination, tenderness was found over the right shoulder joint, which had no general limitation of movement. This condition gradually subsided; but the diarrhoea persisted after saline therapy, and the patient did not look well. Sigmoidoscopic examination on November 9, 1942, revealed hyperæmic mucosa, which bled easily. There were a few small pin-point ulcers, and culture from a swabbing yielded a growth of *Bacterium dysenteriae* Flexner. The patient was given a total of 143 grammes of sulphaguanidine, after which attempted culture from the stools produced no growth of organisms. However, the condition of the bowel mucosa appeared unchanged. On December 17, 1942, the patient had a further exacerbation, passing semi-solid stools with blood and mucus; again, *Bacterium dysenteriae* Flexner was isolated from the stools. A further course of saline therapy and a further 120 grammes of sulphaguanidine were given. Sigmoidoscopic examination revealed that the bowel was still hyperæmic and oedematous, although no ulceration was apparent. On January 11, 1943, the patient developed generalized urticaria and passed blood and mucus in the stools, in which were found numerous trophozoites of *Entamoeba histolytica*. A sigmoidoscopic examination on January 12, 1943, revealed that the bowel was hyperæmic, with numerous raised, yellowish areas typical of amebic dysentery.

This soldier has never been out of Australia. He had lived in Melbourne and was drafted to the Northern Territory in May, 1942. He was in the same camp as Sapper M. (Case IV).

Treatment.

The treatment adopted in these cases was as set down in "Director of Medical Services A.I.F. (M.E.) Technical Instruction No. 3".

A course of intramuscular injections of emetine hydrochloride (one grain) was given each day for ten days. There were no undue toxic reactions in this series. After an interval of three days, the patients were given orally "Carbarsone" (0.25 gramme) twice a day and a daily retention enema of six ounces of a 2% solution of "Yatren" for a further ten days. A low residue diet was given during the early stages, and the diet was gradually increased. At the end of this course of treatment the stools were examined for trophozoites or encysted forms of *Entamoeba histolytica*. In Cases I, IV and V cysts were detected in the stools, and a course of emetine bismuth iodide was given. The patients had a light tea at 5 p.m., and at 8 p.m. one grain of phenobarbital was given, followed in half an hour by emetine bismuth iodide. On the first day one grain was given, on the second day two grains were given, and then three grains were given for eight successive days, until a course of 27 grains had been administered.

In Cases II, III and VII the patients were clinically free from symptoms after one course of treatment with emetine hydrochloride, "Carbarsone" and "Yatren"; but in Case VI two courses of therapy were administered.

In each case a stool was examined on three successive days; three more stools were examined following the administration of nine grains of sodium sulphate each night for a further three days.

Discussion.

To our knowledge no cases have been reported in which amebic dysentery has been contracted in army camps in Australia by personnel who have not been abroad, so these cases have been recorded in full, to bring to the notice of medical officers the possibility of this condition. Clinical diagnosis is extremely difficult, as is illustrated by the fact that these patients had been ambulatory for a considerable time before their admission to hospital.

From the pathological aspect, the finding of *Entamoeba histolytica* in the stool in Case I, and the high incidence of non-pathogenic protozoal infestation noted on routine examination of the stools, were suggestive that further cases of amebic dysentery might occur. Every effort was made to make the laboratory staff "amebic" conscious. Thorough investigation was made in all clinically refractory cases of bacillary dysentery after attempted culture had failed to yield a growth of organisms, and in those cases of recurrent enteritis from which no pathogen was isolated. A freshly passed specimen of faeces was examined each day, and

scrapings were obtained by means of the sigmoidoscope and examined until there was no evidence of inflammatory activity, as judged by the appearances of the stool and the bowel mucosa.

In our experience, repeated microscopic examinations of the stools were more fruitful than long and thorough search of one specimen. The microscope was often set up in the ward and sigmoidoscopic scrapings were obtained by means of the sigmoidoscope and examined. The diagnosis in at least two of these cases might not have been established unless complete reciprocity had existed between the ward staff and the pathology department.

The stools in all but Case I were sufficiently distinctive to be almost diagnostic of amebic dysentery. They were fluid and relatively copious and had a characteristic foetid odour, and they contained fecal material and much glairy, blood-stained mucus. On microscopic examination red cells were numerous, and occurred in clumps and rouleaux. Two diagnostic criteria were always satisfied—namely, active progressive movement and the finding of ingested red cells in numerous amebæ. In stools from the patients suffering from acute amebic dysentery, the whole picture is characteristic and unmistakable. Fairly active trophozoites of *Entamoeba coli* containing ingested yeast spores may cause confusion. Staining with a 0.5% solution of aqueous neutral red greatly facilitated the differentiation of ingested particles. Out of interest, fixed preparations were stained with iron-haematoxylin. It is stressed that nuclear characteristics are unreliable, if material for fixation is not absolutely fresh.

One fact which emerges from this report is that, to our knowledge, this is the first occasion on which an outbreak of amebic dysentery has occurred in members of the fighting forces not returned from overseas. That there should be further outbreaks seems not unlikely. Another aspect worth some speculation is the likelihood that this disease may manifest itself after a long latent interval. Amebiasis may feature more prominently in the differential diagnosis of vague abdominal conditions, and a history of not being outside Australia will not exclude this condition, as it might have done previously. On reviewing this small series, we noted that the presenting symptoms were persistent diarrhoea associated with vague abdominal pain. Our experience suggests that medical officers should refer for further investigation all patients with symptoms.

Acknowledgements.

The Director-General of Medical Services, Major-General S. R. Burston, has kindly given permission to publish this report.

We desire to express our indebtedness to Colonel A. W. Morrow and to Lieutenant-Colonel J. P. Moran for their assistance in the management of these patients and for their helpful criticism of this report.

Reviews.

BIOCHEMISTRY AND MORPHOGENESIS.

TWELVE years ago Joseph Needham published his monumental three-volume work on chemical embryology. Up to that time almost the only avenue of approach to the chemical investigation of morphology had been through that difficult region of matter which lies between the largest particles recognizable as molecular, and the smallest particles recognizable as morphological structures. Shortly after the appearance of that book, however, a new line of investigation became available. It was discovered that stimuli for embryonic growth and development could be provided by certain simple chemical substances. These could be regarded as morphogenetic hormones. Dr. Needham's recently published book on biochemistry and morphogenesis is largely concerned with this aspect of the subject.¹

The book is divided into three main portions. The first deals with the chemical nature of the substratum, in which embryological development takes place. The second portion deals with morphogenetic stimuli. The localization of these agents in the embryonic structures, their chemical nature

¹ "Biochemistry and Morphogenesis", by Joseph Needham, F.R.S.; 1942. Cambridge: The University Press. 16" x 7", pp. 803, with 328 illustrations. Price: 52s. 6d. net.

and some factors affecting their mode of action are considered. In the third portion the chemical mechanisms of morphogenesis are discussed. This portion is concerned with the metabolic changes which occur in the developing embryo. These changes are characterized, not only by alterations of amount and relative distribution of different materials, but also by alterations in the relative rates and even in the directions of the reactions taking place.

As the author himself emphasizes, it is impossible as yet to present any clear and coherent picture of the chemistry of embryological processes. The material available consists mostly of discrete observations made on a wide range of animal species. The determining factor in the choice of material has usually been convenience and accessibility for experiment and observation. It has rarely been possible to follow a logical sequence in the problems attacked. Simpler forms of animal life with free living embryos, for example, often lend themselves most readily to the investigation of early stages of embryological development. For investigation of later stages, on the other hand, some of the large species of higher animals may be more convenient. To these can be applied methods in which considerable experience has been gained in the study of adult forms.

The discovery that the primary stimulus to the development of an embryo was a substance or group of substances common to different species was striking enough. This material was shown to retain its properties after being boiled and after receiving other rather drastic treatment. It was not long before an important constituent of this material was shown to be a steroid related chemically to sex hormones on the one hand and to carcinogens on the other. Indeed, it was found that some carcinogens were active primary evocators of embryological development, while extracts of embryos were able to produce new growths in adults. The discovery pointed to the existence of a common type of chemical stimulus to the initial stages of growth, no matter what the course of its subsequent progress might be.

The inconclusive evidence for the presence of a carbohydrate, glycogen, as an essential constituent of the growth-stimulating substance, is also discussed.

It would have been surprising if protein had not been found in this material. Nucleoproteins were found to be constant constituents. Their importance appears to lie in imparting direction or specificity to the various reactions of growth which are indifferently catalyzed by the steroid portion of the active material. Several investigators, as the author indicates, have been struck by the analogy between this relation between steroids and proteins and that between coenzymes and their associated proteins. The chemically simple coenzymes determine the nature of the reaction catalyzed. They are effective on a number of substrates. The protein associated with the coenzyme, on the other hand, determines the particular substrate which is affected.

The work which Dr. Needham reviews, including his own, shows that the later stages of development have essential features in common with the earlier stages. They differ from the earlier stages in the increasing extent to which the reactions following the initial stimuli are controlled and limited by increasing cellular complexity. It may even be said that the main difference between genetics and embryology is that in the former those inductors of growth are considered which on the whole are unable to pass outside the boundary of the cell in which they are formed, and in the latter, inductors affecting regions or groups of cells are of principal importance.

From the chemical point of view, increase of morphological differentiation is associated with decrease in the extent of the regions over which reactions occurring in the organism can exert their immediate effects. Cell growth and differentiation seem to be opposed functions; the rate of cell division varies inversely with the degree of differentiation. The two processes can be favoured independently by different groups of amino acids. Excess of certain of the "essential" amino acids in the nutrient medium, for example, leads to the growth of excessively large tadpoles immature for their age. Excess of other amino acids (especially thyroxine) leads to the growth of tadpoles which are small for their age, but in advance of their normal degree of development.

In the section on the mechanisms of morphogenesis the author considers chiefly the changes and modifications which occur in that complex series of reactions which constitute respiration in the wider chemical sense. He discusses the evidence which shows that this process consists of a number of discrete reactions which can be associated or "geared" together in many different ways. The particular reactions which are "in gear" or are linked (to use the more customary term) depend on the organism and its stage of development.

The evidence showing that the ontological summary of morphological evolution is accompanied by an analogous summary of chemical reactions is also briefly considered.

This book is not for the general reader. Indeed, it could be critically appreciated only by the specialist having that rare combination of equipment in morphology and biochemistry possessed by the author. For the investigator in any branch of the subject treated it is a most valuable work of reference. Its value in this respect is greatly increased by the completeness and variety of its indices and of its bibliography of more than five thousand references. The general index is profuse in cross-references, but avoids much of the delay involved in the use of such an index by having "principal point" reference printed in heavier type. In addition, there are indices of animals, of plants and of genes to which reference is made. The glossary of terms used in the field of morphogenesis is invaluable to students of a subject just emerging from a rather chaotic state. Eloquent of this state is the inclusion of a "black list" of terms and concepts, the use of which is not recommended. The profuse illustrations of the book include many half-tone and a few coloured plates.

SURGICAL CARE.

A BOOK devoted to a special part of surgery, such as "Surgical Care: A Handbook of Pre- and Post-Operative Treatment", by R. W. Raven, always arouses great interest.¹ It is, therefore, disappointing to find that in a book of only 271 pages, 56 pages are devoted to pure pathology. This particular subject can be better studied in books devoted to pathology. Surely the opening chapters of such a book as this should be devoted to such subjects as the physiology of water balance, the surgical care of patients with diabetes, and the special apparatus needed for pre-operative and post-operative care, and so on. One chapter of the book is devoted to radiation therapy; but again, this is a subject which is better treated in a monograph, and justice cannot be done to it in eight pages. It is a great pity that there is this waste of space, since, when the author gets on to the subject proper, his advice is always sound. There is, however, one further criticism to make, and that is that insufficient use is made of headlines and numerals in emphasizing points which have no direct relationship to one another. It is to be hoped that in future editions the author will give more details about pre-operative and post-operative treatment, and less about subjects which, although closely related, have no immediate bearing on surgical care.

THE FORGOTTEN PEOPLE.

A WARNING against the possible destruction of the large unorganized part of the population that exists between organized labour and capitalism is sounded by the Right Honourable R. G. Menzies in "The Forgotten People", the title given to a book of broadcast essays.² The broadcast essays, delivered by the author in 1942, cover a number of subjects that are receiving deep thought at present and that will be problems for many years to come. The four freedoms, capitalism, censorship, lend-lease, unionism, democracy and the rationalization of industry are some of the subjects examined by Mr. Menzies. In dealing with the rationalization of industry, he points out very clearly that no government is justified in wiping out an undertaking built up over many years, unless it is necessary to do so for the successful conduct of the war and unless such an action will result in a real release of manpower. There are four chapters on democracy covering its nature and task and its sickness and achievements. Mr. Menzies is confident that democracy will prevail. He stresses the danger of inflation, about which the first point to be observed is that inflation is "inequitable taxation since it is imposed upon everybody at the same rate".

All royalties from the sale of the book are being donated by Mr. Menzies to war funds.

¹ "Surgical Care: A Handbook of Pre- and Post-Operative Treatment", by R. W. Raven, F.R.C.S.; 1942. London: Edward Arnold and Company. 7½" x 5", with illustrations. Price: 10s. 6d. net.

² "The Forgotten People, and Other Studies in Democracy", by Robert Gordon Menzies; 1943. Sydney and London: Angus and Robertson, Limited. 7½" x 5", pp. 202. Price: 4s. 6d.

The Medical Journal of Australia

SATURDAY, JULY 24, 1943.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

THE USE OF RUBBER GLOVES IN SURGERY DURING THE PRESENT EMERGENCY.

ALARM has recently been expressed in one of the capital cities of the Commonwealth at what has been described as a shortage in rubber gloves for the use of operating surgeons. Among the views expressed was the opinion that while according to all reports there was no shortage of rubber for the manufacture of contraceptives, it was scandalous that the lives of persons undergoing surgical operation should be endangered because insufficient rubber gloves were being made—a view with which, if it were true, all reasonable people would agree. Inquiries from the chairman of the Medical Equipment Control Committee have revealed that the shortage is not real, but was due to an error in distribution because the manufacturer was not as wide awake as he might have been. There is in point of fact no shortage of surgical rubber gloves for immediate needs, but about the future a different story has to be told and medical practitioners should be acquainted with all the facts. The facts are few—surgical rubber gloves cannot be manufactured from salvaged old rubber, the stocks of new rubber in Australia are by no means unlimited, and large supplies of rubber gloves are not likely to be imported from other countries. It is thus clear that the length of time during which medical practitioners and others will have rubber gloves at their disposal is directly related to the rate at which, and the care with which, they use them.

This statement may be regarded by some as cold comfort, and in these circumstances it is appropriate to direct attention to an editorial which appeared in the January, 1943, issue of *The British Journal of Surgery—Australia* is not alone at the present time in its fears of a possible rubber glove shortage. The editorial holds for British surgeons a little more than the "cold comfort" of the statement just made in regard to Australia, for in the concluding sentence readers are told that if, despite the production of synthetic rubber gloves in the United States of America, supply is restricted, plans for meeting the situation can be prepared. It deals with the subject historically and includes some recent recommendations of the War Wounds Committee of the Medical Research

Council which should be widely known. Rubber gloves were first used in 1898 by William Stewart Halstead who was professor of surgery in Johns Hopkins University. Many surgeons condemned and refused to use them, and although in 1898 at the German Congress of Surgery such men as Mikulicz, Perthes, Döderlein and von Manteuffel declared that surgeons would certainly use gloves that were pliable, thin, easily sterilized and not too costly, there was much opposition to their introduction. We read in Bateman's life of Berkeley Moynihan that on his return to England from a meeting of the American Surgical Association in 1903 Moynihan brought with him several pairs of rubber operating gloves that had been given to him by an American surgeon, and that this "caused even more fun to be poked at him" than had followed his previous wearing of a white coat during operations. Australian graduates, too, of the early years of this century will recall some of the discussions amongst their seniors on this subject when some of those more resistant to conversion bolstered up their arguments with reference to "the hand of iron in the glove of rubber", a phrase borrowed by them from surgeons with similar views on the other side of the Pacific. Now, of course, as everyone knows, the wearing of rubber gloves by the surgeon and his assistants at an operation is accepted and adopted in all countries as being in the best interests of the patient and also, incidentally, of the surgeon. It is surprising to read in *The British Journal of Surgery* editorial that "there were surgeons of the first rank both in technique and results, not long passed away, who never wore gloves in spite of being surrounded by colleagues who did". These men, we are told, were not die-hards, but believed that gentleness and a dry wound were the best means of obtaining healing by first intention. It must never be forgotten that there is "potential danger" in the use of rubber gloves—and this because the frequency of puncture is higher than generally suspected. The editorial publishes a table drawn up on information supplied by the theatre sister of a hospital of nine hundred beds. Of 349 gloves used in one week no less than 77, or 22%, were perforated. If the surgeon has taken all possible care in the sterilization of his hands and changes his gloves as soon as a perforation is known to occur, the potential danger will be much reduced. Of course, all perforations do not at once become obvious. This brings us to the recommendations of the War Wounds Committee, already mentioned. The following recommendations are reproduced *verbatim* from the editorial:

1. That rubber gloves should always be used for operations in septic cases, and by surgeons who were carriers of virulent streptococci.
2. That surgeons who proposed to operate without rubber gloves should have their hands tested periodically, to make sure that they do not become carriers of virulent organisms.
3. That fabric gloves were undesirable.
4. That surgeons proposing to operate without gloves should endeavour to maintain a "no-touch" technique as far as possible.
5. That the use of one pair of gloves for several operations, with cleansing of the gloves on the hands between, was undesirable, owing to risk of unnoticed punctures in septic cases.
6. That the use of rubber gloves by the theatre sister could in many cases be obviated: (a) if forceps were used to pass instruments to the surgeon; (b) if the surgeon or the "first assistant" himself picked up the instruments and either laid them on a special towel or tray after use (with the handles in such a position that they could not be

contaminated) or returned them direct to a sterilizer; (c) if the needles likely to be needed for an operation were threaded with forceps, or, alternatively, were threaded before they were sterilized.

7. That the use of rubber gloves for surgical dressings is generally unnecessary except in the case of procedures which are too complicated to be managed with forceps alone.

The authors of *The British Journal of Surgery* editorial insist that nothing that they have stated in their article should be taken as advocating the abandonment of the use of rubber gloves for operative surgery in times of peace. They do remind us, however, that a surgeon who is compelled in the present emergency to do without gloves, is not necessarily faced with immediate disaster. Everything possible to avoid such an event should be done, and from what can be gathered, everything possible will be done. But there is no certainty, and in this matter the future cannot be foretold. Those in control of medical supplies are prepared to meet the position with materials at their disposal; it is incumbent on medical practitioners to remember the watchwords, economy and care.

Current Comment.

THE PROGNOSIS OF ACUTE CORONARY OCCLUSION.

In December, 1940, a leading article in this journal was devoted to the ultimate prognosis and rehabilitation in coronary occlusion. Discussion centred mainly around a report by A. M. Master and Simon Dack published in *The Journal of the American Medical Association* of September 7, 1940. On that occasion they dealt with 415 patients who had survived an acute coronary occlusion. Of the 415 patients (342 males and 73 females) 75% had suffered one attack, 22% a second attack, and the remainder a third or fourth attack when they first came under the observation of the authors. Master and Dack found that approximately half the number of patients were able to resume their former occupations within one year and usually within six months. In our reference to this work attention was also drawn to another communication by Master, Dack and H. L. Jaffe in which they produced evidence tending to show that effort plays no part in the causation of coronary occlusion.

Master, Dack and Jaffe have recently reported the results of objective tests of cardiac function applied to 202 patients of their former series who have been followed for periods varying from two to eight years.¹ The tests used included estimation of the vital capacity, the "Master two step" exercise tolerance test, the taking of a teleoroentgenogram to determine the size and configuration of the heart, the study of the ventricular pulsation by fluoroscopy and kymography, and the taking of an ordinary electrocardiogram and of an electrocardiogram after application of the standard "two step" exercise. The result of the tests was correlated with the clinical symptoms, physical findings, and subsequent course of the patient; and by repetition of the tests at intervals of three to twelve months it was determined approximately when each test gave a normal result. Recovery from acute coronary occlusion was found to be good or complete in one-third of the cases, that is, the patients had no symptoms of diminished cardiac reserve on routine activity. One-half returned to work, usually full time, and cardiac reserve as measured by function tests was normal or only slightly abnormal. Persistent reduction in vital capacity was rare in the good recovery group, but common in those whose recovery was poor. The vital capacity was not infrequently normal in the presence of severe *angina pectoris*. The result of the "two step" exercise tolerance test became normal in 18% and remained abnormal in two-thirds of the cases. Return to normal usually occurred

one or two years after the attack and was associated with a good clinical recovery and decreased incidence of subsequent attacks.

In discussing heart size as observed by the teleoroentgenogram, Master, Dack and Jaffe point out that several investigators believe that coronary sclerosis or myocardial infarction is often the sole factor in the development of cardiac enlargement. They add that the preponderant opinion is that coronary disease or myocardial infarction as such does not lead to ventricular enlargement unless hypertension has been present or congestive heart failure supervenes. Their observations of patients suffering from an acute attack have shown that approximately three-fifths of the patients give evidence of cardiac enlargement, particularly of the left ventricle, and that the vast majority of such patients are hypertensive or give a history of previous hypertension. When the patients were considered according to groups it was found that cardiac enlargement was present in only one-third of the "good recovery group", but that it occurred in two-thirds of those making a poor recovery. "Thus, recovery of cardiac function is more apt to be complete when the size of the heart is normal; yet a severe degree of coronary disease may exist without cardiac enlargement."

A systolic expansion of the left ventricle, pathognomonic of previous infarction, was observed fluoroscopically or by the kymograph in nearly three-fifths of the patients, and localized absence or diminution of pulsation in 25%, and with few exceptions these abnormalities were permanent. Although an abnormal ventricular pulsation did not preclude a good recovery from the attack, it was found to be almost universal in those who made a poor recovery. Not infrequently it was the only remaining sign of previous infarction, being observed in the majority of patients whose electrocardiogram returned to normal. Patients with normal pulsations usually recovered completely and rarely sustained another attack. The electrocardiogram returned to normal or almost normal in 21% of cases, usually within one year after the attack; and the great majority of the patients in these cases made a good recovery, as well as those whose T waves became normal, although the Q waves persisted. However, persistence of the graphic findings characteristic of previous infarction, which was observed in almost two-thirds of the patients, was not found to be necessarily a bad prognostic sign. The location of the infarct, whether anterior or posterior, did not affect the clinical course; but the prognosis was worse when infarction of both surfaces had occurred. The electrocardiogram after the standard "two step" exercise revealed signs of coronary insufficiency (RS-T depression or T wave inversion) in five of 18 patients whose control record was normal, and in 24 of 39 patients with abnormal electrocardiograms. A negative response to the test was associated with a good recovery and good cardiac function. It was found that a normal response to the "two step" exercise tolerance test, a normal ventricular pulsation, or a normal electrocardiogram following coronary occlusion was usually accompanied by complete clinical recovery. When the results of these tests became normal, significant *angina pectoris* and dyspnoea were uncommon and a subsequent attack of either coronary occlusion or heart failure was rare. There was nearly always objective evidence of disability in those whose recovery was poor.

In the discussion that followed the presentation of Master, Dack and Jaffe's paper, Cary Eggleston voiced opinions that may be held by many practitioners. Eggleston said that he did not wish to minimize the importance of the study reported, but he thought that while several tests might be employed for judgement of the degree of recovery of cardiac functional integrity after infarction, the results of such tests scarcely yielded enough, when compared with clinical experience and good clinical judgement, to make the expenditure and labour worth while. In spite of this view Eggleston thinks that the tests described may be applied with advantage in medico-legal cases, "for they certainly are capable of yielding objective data which can well be of more or less determinative value to present a court". This attitude seems to be a little inconsistent with the first statement—

¹ *The Journal of the American Medical Association*, December 19, 1942.

the determinative value should not be very different in either set of circumstances. In his reply Master admitted that a healthy scepticism was good, but added that he had overcome this when he had proved his case by actual demonstration. Master and his colleagues have presented to medicine a consistently valuable series of observations. No one will suggest that any one test or any group of tests should be used without sound clinical judgement. The trouble is that clinical judgement in cardiac prognosis is not always sound and too many shots are made in the dark. To lay stress on the value of the tests described by Master and his co-workers will probably bring more patients with cardiac disabilities to the attention of experienced cardiologists, and they are more likely than others to have a sound clinical judgement in the matter.

PENTOTHAL ANÆSTHESIA.

ANÆSTHETICS for intravenous use, commonly known as "intravenous anaesthetics", although introduced quietly and insidiously, are steadily gaining a well-deserved popularity. Of the various substances that have been employed for this purpose, "Pentothal Sodium" holds pride of place. L. E. Morton,¹ writing of his experiences at an Australian general hospital, gave a very clear and concise description of this drug and the contraindications to its use. An inelastic method of treatment or of giving an anaesthetic is to be decried; but, and this is also applicable to anaesthetics for intraspinal use, the practitioner who employs "intravenous anaesthetics" at infrequent intervals is well advised to learn the details of technique for the use of one satisfactory drug and to become proficient in its use to the exclusion of other related compounds.

If the contraindications to the use of "Pentothal Sodium" are observed and the instructions for its use carefully followed, then it may be said to be the ideal anaesthetic for many of the minor operative procedures. Perhaps, in deference to the cynic who said that there are no minor operations, only minor surgeons, we should say shorter operative procedures which do not require relaxation of the patient's muscles. The chief contraindications to the use of "Pentothal" anaesthesia are laryngeal obstruction, conditions in which blood may inadvertently enter the pharyngeal region and cause laryngeal spasm, gross respiratory diseases, dyspnoea, gross infections of the head and neck, and impaired renal or hepatic function. In these conditions any anaesthetic which further depresses respiration or causes laryngeal spasm is to be assiduously avoided, and hence these conditions are contraindications to the use of "Pentothal Sodium", which is a profound respiratory depressant.

Morton recommended that an adult patient should have a pre-operative injection of a sixth of a grain of morphine and one one-hundred-and-fiftieth of a grain of atropine. This is the minimum dose of atropine that should be given before "Pentothal" anaesthesia, since it is necessary to prevent excess mucous secretion which may precipitate laryngeal spasm. The atropine is also necessary to inhibit the development of sneezing, coughing or hiccup during the anaesthesia. The technique of administration described by Lundy consists of asking the patient to count while a 5% solution of the drug is injected intravenously at the rate of one cubic centimetre every five seconds until he has stopped counting. The amount of drug given is then noted and the injection continued at the same rate until half as much again has been given. After the lapse of half a minute the operation may be started, and from then on amounts of half to one cubic centimetre are injected as determined by the depth of the anaesthesia. As with inhalation anaesthetics, the depth of the anaesthesia is indicated by the changes in respiration and in the lighter stages of anaesthesia by slight movements of the fingers and face. No reliance can be placed on the changes in the pupils to distinguish between the stages of anaesthesia.

The importance of an unobstructed airway during the anaesthesia may not be readily appreciated when an

"intravenous anaesthetic" is employed. Be that as it may, it cannot be too strongly emphasized that the greatest fault during the conduct of "Pentothal" anaesthesia is to permit the airway to be imperfect. Whenever the anaesthetist is worried about the patient's condition and even though the airway is clear, the administration of oxygen may be considered a wise precaution. Because of the danger of laryngeal spasm a laryngoscope and intratracheal tube should always be at hand when "Pentothal" is given. Incidentally, an artificial airway should not be introduced until the patient is deeply anaesthetized, as it may induce laryngeal spasm.

According to the advertisements which appear in this and other journals there are more than 300 published papers dealing with the use of "Pentothal Sodium". There is, however, a certain similarity about this literature. The praise for "Pentothal Sodium" is most conspicuous, but so also is the warning that the greatest danger of "Pentothal Sodium" is respiratory depression and obstruction. The paper of Barnett A. Greene² may be mentioned, since he has so well summarized the basic rules for the use of "intravenous anaesthetics", the indications for intravenous anaesthesia, the measures used to prevent complications associated with it, and the contraindications to it. Greene has also directed attention to the value of "Pentothal Sodium" for anaesthesia in patients with a tracheotomy, broncho-pleural fistula or other abnormal communication between the respiratory tract and the external air, for surgery after which it is vitally important that there be no vomiting, for example, wiring of a fractured jaw, and for very rapid induction of anaesthesia in patients who have high blood pressure or "compensated" heart disease, or who display great excitement or maniacal activity.

Most surgeons and anaesthetists use "Pentothal Sodium" in certain cases and not in others; but there are a few clinics, chiefly in the United States of America, in which "Pentothal Sodium" is used as the anaesthetic agent for the most extensive and prolonged operations, as well as for operations of short duration. Recently T. C. Davidson³ has reviewed the results of the use of "Pentothal Sodium" in 9,000 consecutive cases in such a clinic. From these results he was most impressed with the value of the continuous administration of oxygen during the anaesthesia. This author issues a warning against the use of more of the drug than is absolutely necessary. In this series the maximum amount used was four grammes; in the majority of the cases the dose used did not exceed two grammes. If the operation is prolonged he advises that two cubic centimetres of a 0.3% solution of picrotoxin should be injected when the anaesthetic period is finished. Such an impressive series of cases undoubtedly deserves attention and gives authority to the statements of this author. On the other hand, the administration of "Pentothal" over a prolonged period requires the attention of a specialist anaesthetist; and for that reason alone it is unlikely that "Pentothal Sodium" or any similar drug will supplant the well-established methods of anaesthesia for the so-called major operations.

In his paper Morton stressed the advantages of "Pentothal Sodium" when quick smooth induction is required, particularly in hot weather when ether inductions are usually prolonged and are wasteful of ether. Under war conditions the saving of time may be very important, as may also the fact that the patient may be moved from the theatre without the danger of sudden respiratory obstruction at that stage. Further, the rapidity with which the anaesthetic passes off obviates the need to watch the patient for long, and thus a larger number of cases may be dealt with by the same staff. Again, the absence of any post-operative vomiting leaves the patient in a much better condition for evacuation than would have been attained after an ether anaesthetic. When all the facts are considered it is impossible to deny the statement that under both war and civilian conditions "Pentothal Sodium" is easily the best anaesthetic agent for most short operations in which there is no danger of laryngeal spasm.

¹ The Australian and New Zealand Journal of Surgery, April, 1943.

² Anaesthesia and Analgesia, January, 1942.

³ Anaesthesia and Analgesia, January, 1943.

Abstracts from Medical Literature.

MEDICINE.

The Erythrocyte Sedimentation Rate.

JOHN D. HELM, JUNIOR (*The American Journal of the Medical Sciences*, February, 1943) discusses the literature published on the significance of the erythrocyte sedimentation rate, and presents a study designed to determine the predictability of the character (increased or normal) of the rate. The author aimed to learn from his study whether the routine use of the test in general medical practice is justifiable, or whether its use should be limited to certain situations in which perhaps it should be repeated more often. In the records of 1,000 patients on whom the sedimentation rate was determined, the author found the result was predictable in 943 cases. In 173 cases, it was not only predictable, but confirmatory in regard to the final diagnosis, but of no help in therapy. The rate was not predictable in 57 cases, but on reanalysis of the records, an explanation of the unexpected rate was discovered in 41, and no explanation was found in 16 (1.6%). Including those cases in which a normal rate was of assistance in diagnosis, the sedimentation rate helped in the management of the case in 237 instances and was of no help in 763. The author believes that serial determinations of the sedimentation rate are of value in following the course of such diseases as rheumatic infection, tuberculosis, coronary occlusion, and arthritis; and that single tests are of little or no value except in regard to patients who, in the absence of evidence of organic lesions, are suspected of having only a functional disease. In these patients, an increased sedimentation rate suggests the presence of a morbid process and makes further investigation necessary. The author confirms the reports already in the literature, and agrees that the test is of value in determining the presence and extent of tissue destruction, and also the systemic reaction to a disease process; it is useful as a lead to show the need of further investigation of an otherwise healthy individual.

Thrombocytopenic Purpura following Sulphonamide Therapy.

L. WHITTINGTON JORHAM, SIMON PROFF, JOSEPH L. SCHWIND AND DAVID R. CLIMENKO (*The American Journal of the Medical Sciences*, February, 1943) report three new cases of thrombocytopenic purpura following the use of sulphonamide drugs, and also review five previously published cases of this condition. Of the three cases reported, one followed the administration of "Neoprontosil" and sulphanilamide to one patient who recovered and the other two followed the administration of sulphapyridine and sulphapyridine and sulphadiazine respectively to two patients who died. The authors state that all of the well-known sulphonamide compounds have produced purpura in susceptible individuals, and that sulphanilamide, sulphapyridine and sulphadiazine have caused death. The one patient reported to have had purpura following sulphathiazole re-

covered. The total amount of drug administered by the authors in their cases varied from 5.5 grammes in three days to 48 grammes in eleven days, thus emphasizing the wide variation in the amount necessary to produce a toxic effect, and the great difference in individual susceptibility. To one of the three reported patients who recovered, the same drug was given a short time subsequently, with no untoward effect. It is stated that purpura should be recognized as a possible though infrequent complication of sulphonamide drug therapy, and that the mortality of 50% in the eight cases reported in the literature is very high. The authors' study shows that the sooner sulphonamides are stopped after the appearance of purpura, the better the prognosis for recovery. When blood smears from patients receiving sulphonamide therapy are examined for granulocytopenia, a note as to the number of platelets present should always be made. Thrombocytopenia precedes the signs of purpura, and early observation of platelet reduction may prove life saving. The authors emphasize the striking similarity between the clinical signs of the hemotoxic action of benzol and aniline on the one hand, and the sulphonamides on the other, the fact that their chemical structure is closely related, and that they are capable of producing identical pathological lesions in the bone marrow and in the peripheral blood.

Silicosis.

In summing up the present position in the study of silicosis, E. P. Scarlett (*The Canadian Medical Association Journal*, November, 1942) states that the term pneumokoniosis has no longer any clinical content; the essential ingredient of dust which has been proved to cause pathological changes in lung tissue is silica. Silicosis is a condition of abnormal fibrosis of the lungs due to the inhalation of finely divided free silica, there being a potential hazard in any industrial work involving the release of fine silica dust. The following factors are of importance in the development of the condition: (a) the size of the dust particles, the finer the dust, the greater the hazard; (b) the concentration of particles in the air; (c) the length of exposure, a minimum of two years under the worst conditions before lesions can be demonstrated; (d) the influence of coincidental dust; (e) individual susceptibility. The inhalation of dust laden with silica particles leads to the deposition of a proportion in the alveoli where they are picked up by wandering phagocytes and make their way into lymph channels. Some are trapped in smaller lymphoid collections, others pass to the larger lymph nodes; a tissue reaction results with deformity of lymph channels and overloading of the lymphatic drainage system. The way is then open for the development of secondary infections, including tuberculosis. Radiographically six definite stages are described according to the degree of tissue reaction and secondary infection. Clinically, silicosis presents no characteristic symptoms and signs. The most outstanding symptom is shortness of breath, and this may be accompanied by cough, chest pain and sputum. Hemoptysis suggests tuberculous infection. Complicating infections cause fatigue,

anorexia, weight loss, diarrhoea and night sweats. The most common physical finding is restricted expansion of the chest, scattered rhonchi and rales also being noted. The diagnosis is based on consideration of the history, physical examination and the radiographic findings. There is a pre-clinical or asymptomatic stage when extensive pulmonary involvement can be demonstrated radiographically. The second stage is one of clinical or symptomatic silicosis, the stage of complications, and these may be infective, usually tuberculosis (tuberculo-silicosis), or emphysema and cardio-vascular disorders. The most important conditions to be borne in mind in the differential diagnosis are generalized pulmonary carcinomatosis, chronic non-tuberculous pulmonary disease, pulmonary tuberculosis, and chronic passive congestion. The condition progresses slowly and the course of the disease depends on complications. There is no treatment, but some recent work on the use of metallic aluminium as an inhibitor of silicosis suggests that it may be useful as a prophylactic.

Chemotherapy in Ulcerative Colitis.

MOORE A. MILLS AND THOMAS T. MACKIE (*The American Journal of Digestive Diseases*, February, 1943) discuss the results of treatment in 109 unselected cases of ulcerative colitis by chemotherapy. All types of cases, from acute and fulminating types to chronic types with extensive pathological changes in the colon, were included in the series and three of the sulphonamide group, namely sulphathiazole, sulphaguanidine and sulphadiazine, were used as therapeutic agents. The diagnosis in each instance was founded on the basis of the history, the result of the proctoscopic examination, and the X-ray evidence, and during treatment all patients were examined every one or two weeks by the proctoscope when samples for examination by the culture method were taken through the proctoscope, blood levels of the drug were determined and blood counts and urine studies were made. The patients were maintained upon a diet with a high protein and a low carbohydrate content and were given supplementary iron, vitamins, and liver extract when deficiency was present. Routine bacteriological cultures revealed a wide variety of organisms of varying degrees of pathogenicity, and the authors were unable to correlate the bacterial flora with the response to drug therapy. Every possible precaution was taken to prevent confusion of spontaneous remissions of the disease with responses to drug therapy. Definite or marked improvement was noted in 78% of the cases. Sulphadiazine proved to be the most suitable drug for all variety of cases, sulphaguanidine was of definite benefit in the majority of cases in which diarrhoea was not excessive, and should be employed for prolonged periods of time, but none of the drugs should be considered as specific in this disease. It is the authors' opinion that in no cases can chemotherapy be looked on as producing a cure.

"Mapharsen" in the Treatment of Congenital Syphilis.

GIRSCH D. ASTRACHAN AND VAN ALSTYNE CORNELL (*The Journal of the American Medical Association*, March 6, 1943) discuss the use of "Mapharsen"

in the treatment of congenital syphilis with especial consideration of the intramuscular method of administration. Most investigators agree that "Mapharsen" is a good antisyphilitic drug, and that it is less toxic than nearsphenamine. The fact that only six fatalities resulting from the use of "Mapharsen" have been reported, whilst over 12 million ampoules of this drug have been manufactured, makes this trivalent arsenical very suitable for antisyphilitic therapy. The authors conclude that "Mapharsen" is a good drug for patients with late congenital syphilis and that it is useful in cases of interstitial keratitis. The concurrent method of administration of bismuth compounds and "Mapharsen" in late congenital syphilis should be used for healthy patients only and should be combined with the alternate method of administration. Frequent blood counts and liver function tests should be performed on these patients. "Mapharsen" proved to be useful in the authors' cases of early congenital syphilis. Further observation of many more cases will be necessary in order to come to a definite conclusion about the efficacy of "Mapharsen" in early congenital syphilis. The authors believe that 0.75 milligramme per kilogram of weight should be the maximum dosage for patients with any form of congenital syphilis. "Mapharsen" is less toxic to children than to adults. It can be given intramuscularly in selected cases. However, it should be used only in cases in which all attempts at intravenous therapy have failed. Further experimentation with various solvents is desirable in order to find the least painful method of intramuscular administration.

Colitis following Amœbiasis.

M. MONNEROT-DUMAINE (*Revue de la Science médicale française du Moyen-Orient*, January, 1943) states that chronic amœbiasis, long unrecognized, is now looked for everywhere, diagnosed hurriedly and treated indiscriminately. It is a mistake to diagnose chronic amœbiasis in a case in which a previously occurring attack of a dysentery-like condition has not been proved by examination of the stools to be of amœbic origin; the attack may have been one of bacillary dysentery or of some other recto-sigmoid lesion. Conditions mistaken for chronic amœbiasis may produce extremely varied clinical pictures; but three characteristic types are spasmodic colitis, fermentative colitis and therapeutic colitis. If these conditions are wrongly diagnosed as chronic amœbiasis, the results will be unfortunate for the patients. In the first place, amœbicidal treatment will be continued, and the drugs employed are extremely toxic. Arsenical preparations are harmful to the nerves, in particular the optic nerve; emetine also may bring about nervous disorders, but its long-continued use invariably causes asthenia with general depression and arterial hypotension. In the second place, the continued adherence to too strict a dietary régime not only keeps up fermentation, but is very depressing. In the third place, the patients recover slowly or not at all; in the case of personnel of the armed forces, this may lead to the labelling of their condition as "chronic amœbic dysentery" and to their being discharged on a pension.

The most common of the three types of colitis mentioned is fermentative colitis; it is the classic chronic diarrhoea with fermentation. In all cases of colitis following amœbiasis, the best course of action is to stop all antidyenteric therapy, to allow a more liberal diet and to institute symptomatic treatment. A diagnosis of chronic amœbiasis must be confirmed by parasitological tests. In doubtful cases the condition may be reactivated, as a test, by means of purgation or the administration of an irritant enema. To be absolutely secure, a short course of anti-amœbic treatment may be given; but it must not be prolonged.

Control of Common Respiratory Infections.

CHESTER S. KEEFER (*The Journal of the American Medical Association*, March 13, 1943) states that the common cold is highly contagious, and the incubation period is short, varying from between twenty-four and thirty-six hours. The infected person can transmit the infection to others only during the first day or two after the onset of the infection. A certain degree of immunity develops as a result of a cold—seven weeks on an average. Vaccines, whether given by mouth or by injection, have been a great disappointment in preventing colds, and they have failed to lessen the number of complications, except when given repeatedly over a long period of time. Extremely encouraging results have been obtained in the prevention of influenza, and there are good reasons for believing that further advances will be forthcoming in the near future. Vaccines made of influenza virus call forth an antibody response in the recipients, but they do not give complete protection against attacks of influenza. The incidence of the disease is reduced in some groups, and the duration of the disease is shortened. Attempts have been made to prevent the spread of the influenza virus and other infective agents by means of ultra-violet irradiation of air and propylene glycol vapour. They were equally effective and should be of great value in prevention of cross-infection in hospital wards and when people live in close contact with others indoors.

Partial Heart Block due to Digitalis.

MAURICE CAMPBELL (*British Heart Journal*, October, 1942) discusses some problems in a series of cases of partial heart block, in a number of which treatment with digitalis was mainly or partly responsible. The series consisted of 141 patients with prolonged P-R intervals, described as latent heart block, and 29 patients suffering from partial heart block with dropped beats. In this latter group there were eleven patients who had dropped beats developing as the first sign of over-digitalization; in six of these the P-R interval without digitalis was known to be 0.2 second or over (average 0.21 second). This finding supports the experience of Mackenzie that it is the patient with latent heart block who is apt to develop dropped beats under digitalis treatment. In three other cases there was an infection or pyrexia that was non-rheumatic. After digitalization the average P-R interval in those cases was 0.29 second, the usual form of block being 3:2. In the

first group there were 15 patients who showed a lengthened conduction time due to digitalis therapy, and six who probably reacted in this way. The average figures before and after digitalis were 0.19 second and 0.22 second respectively. The main predisposing factors were again the presence of latent heart block and pyrexia. The findings led to the conclusion that in a series of cases of partial heart block nearly 40% of those with dropped beats were being given digitalis and 15% of those with latent heart block. The value of digitalis therapy in heart failure is such that the drug should always be used in adequate amounts until experience shows that the drawbacks, if any, outweigh the advantages. The risk of increasing heart block must be taken into account, and this is likely to occur even with reasonable amounts of digitalis. There seemed no great drawback even in cases in which dropped beats were produced, and in general the block passed off quickly within two to four days of cessation of therapy. Freedom from ill effects depends on early recognition of the block. When failure is not present the indications for digitalis are fewer and the recognition of partial heart block may decide against it, but not necessarily so.

The Acid Factor in Duodenal Ulcer.

SIMULTANEOUS collection and examination of samples of gastric and duodenal contents from a series of twenty-three patients with duodenal ulcer have been carried out by J. E. Berk *et alii* (*American Journal of Digestive Diseases*, November, 1942). Twenty-two normal individuals were also investigated as controls. A specially constructed double lumen tube was used and its position was determined fluoroscopically in each instance. All subjects were studied in the fasting state and after an Ewald meal. Thirty minutes following the meal, 15 cubic centimetres of aluminium hydroxide gel ("Amphojel") were given to one group of ulcer patients and a powder consisting of sodium bicarbonate (0.6 gramme) and calcium carbonate (2.0 grammes) was given to another group. Free acid, total acidity and pH value were determined on all samples collected from both stomach and duodenum in all subjects. After a review of the data obtained, it was concluded that the contents of the first part of the duodenum are endowed with a considerable capacity to neutralize, buffer and dilute the gastric chyme which commonly exceeds the physiological needs. In patients with duodenal ulcer the neutralizing ability in the duodenal bulb is impaired, but not wholly lost. Duodenal ulcer patients appear to differ from normal persons in the direction of a defectiveness in the neutralizing capacity in the duodenal bulb as well as in the direction of gastric hyperacidity. The acidity of the contents of the duodenal bulb is largely determined by the type of food undergoing digestion and is related only in part to the degree of the gastric acidity. The oral administration of antacids in the usual therapeutic dose to patients with duodenal ulcer reduces the acidity of the contents of the first part of the duodenum, but the reduction is neither great nor long-lasting and may be followed by a rebound increase.

British Medical Association News.

MEDICO-POLITICAL.

A CONVENTION of representatives of medical organizations in the State of Victoria with the Council of the Victorian Branch of the British Medical Association was held at the Royal Australasian College of Surgeons, Spring Street, Melbourne, on June 11 and 12, 1943, Dr. J. A. CAHILL, the President of the Branch, in the chair.

The convention had been called by the Branch Council for the purpose of discussing schemes for a general medical service for Australia. Those present and the bodies which they represented were as follows: Dr. J. A. Cahill (President of the Victorian Branch of the British Medical Association); Dr. D. Roseby (Senior Vice-President of the Victorian Branch of the British Medical Association); Dr. J. Dale (Junior Vice-President of the Victorian Branch of the British Medical Association); Professor R. Marshall Allan (Honorary Secretary of the Victorian Branch of the British Medical Association); Dr. C. H. Mollison (Honorary Treasurer of the Victorian Branch of the British Medical Association); Dr. H. C. Colville (Chairman of the Council of the Victorian Branch of the British Medical Association); Professor Arthur Amies, Dr. F. J. Bonnin, Dr. M. H. Box, Dr. C. Byrne, Dr. D. A. Carter, Dr. F. L. Davies, Dr. G. V. Davies, Dr. D. M. Embelton, Dr. E. M. Ettelson, Dr. B. D. Fethers, Dr. J. H. Gowlan, Dr. H. Boyd Graham, Dr. J. S. Green, Dr. F. W. Grutzner, Dr. W. E. Harrison, Dr. E. I. Littlejohn, Professor P. MacCallum, Dr. J. P. Major, Dr. F. McAree, Dr. J. Newman Morris, Dr. L. A. Neal, Major K. F. O'Donnell, Dr. J. H. Paterson, Dr. Henry Searby, Dr. W. Sloss, Dr. Kenneth Smith, Dr. Guy Springthorpe, Dr. Roy Watson (members of the Council of the Victorian Branch of the British Medical Association); Dr. C. H. Pitts, Dr. J. T. Tait, Dr. M. Tallent (Central [Melbourne] Subdivision); Dr. W. L. Carrington (Eastern Suburban Subdivision); Dr. R. Southby (Northern Suburban Subdivision); Dr. M. Ashkenasy (North Eastern Suburban Subdivision); Dr. T. O. Sayle (Southern Suburban Subdivision); Dr. A. J. Day (South Central Suburban Subdivision); Dr. R. M. Shaw (South Eastern Suburban Subdivision); Dr. E. F. J. Smith (Western Suburban Subdivision); Dr. E. Guymmer (Ballarat Country Subdivision); Dr. K. Lidgett (Bendigo Country Subdivision); representative of doctors practising in association with Bush Nursing Hospitals); Dr. W. H. Long (Geelong Country Subdivision); Dr. J. M. Andrew (Gippsland Country Subdivision); Dr. D. G. Mackellar (Goulburn Country Subdivision); Dr. J. J. Kelly (North Eastern Country Subdivision); Dr. W. H. Matheson (North Western Country Subdivision); Dr. A. E. Brauer (South Western Country Subdivision); Dr. T. G. Millar (Ear, Nose and Throat Section); Dr. C. J. McCrae (Hospital Residents' Group); Dr. W. Ivon Hayes (Section of Obstetrics and Gynaecology); Dr. K. H. Hallam (Section of Radiology); Dr. J. H. Kelly (Dermatological Association); Dr. F. Niall (Honorary Medical Staffs of Hospitals); Mr. P. G. Jones (Medical Students' Society); Dr. Kevin O'Day (Ophthalmological Society); Dr. H. J. Sinn (Melbourne Paediatric Society); Dr. Lorna Lloyd-Green (Victorian Medical Women's Society); Dr. C. H. Dickson (Medical Secretary of the Victorian Branch of the British Medical Association).

Apologies for Absence.

Apologies for absence were received from the presidents of the Queensland, South Australian, Western Australian and Tasmanian Branches.

The Death of Dr. Richard Herbert Joseph Fetherston.

Dr. Cahill referred to the recent death of Dr. Richard Herbert Joseph Fetherston, who was to have been present at the convention. He said that Dr. Fetherston had been associated for many years with the Branch in all its activities. The members of the convention stood in silence as a tribute to his memory.

The Official Opening.

Dr. J. A. Cahill, in his opening remarks, referred to the recent visit of himself and Dr. D. Roseby to Sydney to attend the convention of the New South Wales Branch. They had been greatly impressed by what they saw and heard, and particularly by the frank expression of views which were, in the main, similar to those of Victorian members. They had returned to Melbourne convinced that it was desirable to establish a better liaison between the Branches by encouraging the representation of one Branch

at the principal meetings of another. It was for this reason that he was particularly happy to welcome visitors to the convention. He welcomed Sir Henry Newland (President of the Federal Council), Dr. W. F. Simmons (member of the Federal Council, immediate past president of the New South Wales Branch and a member of the National Health and Medical Research Council), Dr. K. S. Macarthur Brown (President of the New South Wales Branch), Dr. J. G. Hunter (secretary of the Federal Council), and the Editor of THE MEDICAL JOURNAL OF AUSTRALIA.

Dr. Cahill went on to say that they were met to discuss the future of medical practice in Australia, more especially as it concerned their own State of Victoria. The convention had been called at the request of the President of the Federal Council, Sir Henry Newland, in order that they might obtain from the profession an expression of opinion as widespread as possible. The resolutions adopted by the convention would be placed before the Branch Council to assist its members in formulating the policy for consideration by Branch Convocation. Branch Convocation, they all knew, could either adopt, amend or reject the resolutions the Branch Council put before it. It could not deal with business other than that for which it was specially convened. The convention, however, was advisory and might introduce new matter provided Rule 3 of procedure at convention was observed.

Those present were all well aware of the reason why the profession was discussing the future of medical practice in Australia. Medical practitioners had had put before them an "outline of a possible scheme for a salaried medical service" drawn up by a Committee of the National Health and Medical Research Council. With those present, Dr. Cahill deplored the fact that medical practitioners should have thrust upon them a subject of such vital importance at a time when the Empire, to which they belonged, was struggling for its existence and the enemy in the Pacific was knocking persistently at their door. Today medical practitioners should be devoting every effort to winning the war, and attending to the medical needs of the civil population. Political exigencies, however, had made it necessary to hold the convention.

In his speech opening the Twelfth Session of the National Health and Medical Research Council at Canberra on November 26, 1941, the Minister for Health, Mr. E. J. Holloway, had left no doubt as to what he intended, namely, to have a national salaried medical profession, in other words, to socialize the medical profession.

The idea of working for a fixed salary had never appealed to Dr. Cahill. It eliminated competition, it stultified individual effort, it killed ambition and was a bar to progress. Competition there must be; otherwise the stimulus to increased effort was removed. Dr. Cahill did not believe that either the people of Australia or the great majority of the medical profession desired doctors to become regimented units of a State service, within the rigid boundaries of which individualism would not flourish. The medical profession as a body had proved by its past service that it was aware of its obligation to the community, and it could be relied upon to continue to fulfil those obligations, both in peace and in war, and in the future as it had in the past.

Many had, no doubt, read what Lord Derwent had had to say of the medical portion of the Beveridge plan when it was debated in the House of Lords on the previous Saturday. Its provisions, he said, did not appear to be designed to further the best interests of British medicine or the population. He went on to say that if the Government intended to convert the medical profession into the equivalent of a band of salaried functionaries, or State lackeys, it would degrade the ancient and honourable profession and the everyday citizen would not get a square deal.

Lord Dawson in the course of the same debate told the house that they could not uproot the existing system until they were sure that they had something good to replace it. Freedom for initiative and individual responsibility, he told them, were the life blood of the medical profession, who would not fit into a bureaucratic machine. He further told them that the Ministry of Health was trying to produce a jerry-built structure which would arouse antagonism and distrust, and would kill the scheme. Doctors would not consent to a highly skilled profession being governed by laymen.

Dr. Cahill then referred to the agenda before the convention. Commencing at Number 7, Propositions Numbers 1 to 17 expressed the policy of the Federal Council in regard to the provision of medical services to the community. It would be noticed that they contained certain basic principles, and Dr. Cahill hoped that the profession would without hesitation make it known to the Federal Government in

unequivocal language and assure the people of the Commonwealth that from those fundamentals they did not intend to budge. Under Number 10 was a proposal that the optimum efficiency of medical service to the people of Australia would be provided by what in effect was the existing method of practice with certain necessary additions by which the knowledge and skill of the profession could be brought within reach of those needing them. In Victoria they had appointed small committees who had been asked to report as to how they considered these suggested additions could be implemented. These committees were working well, and to the members of the committees Dr. Cahill wished to express his gratitude.

The term "positive health" would be noticed. "Positive health" was a term coined by the Medical Planning Commission in England and implied something better than "no disease". What was meant by health was difficult to define. In this regard he referred to a very interesting article, "The Science of Health", by Professor John A. Ryle, which was published in the *British Medical Journal* some months previously.

Propositions 19 to 49 were those of the Victorian Branch Council based on a "fee for service" principle.

Now that those present had had ample opportunity of reading the Branch "news letters", of studying the reports and letters in the journals, and of considering at sub-divisional, group and section meetings the business of the day, he trusted they had come prepared to keep in mind the great responsibility they were carrying.

When taking part in a discussion, those present should endeavour to make their contribution logical, dispassionate and helpful, and particularly, not coloured by personal bias and self-interest, remembering there was always another point of view besides their own. Dr. Cahill hoped, too, that everyone was fully impressed with the importance of standing behind whatever scheme was adopted by the majority. If they allowed themselves to be split into a number of groups advocating different schemes they might find themselves with one improvised for them by people with no experience of the problems, a scheme that would be distasteful not only to the profession, but to the community.

Dr. W. F. Simmons said that when he received the invitation from the Victorian Branch Council to make the inaugural remarks at the convention his first reaction was that it was quite beyond his ability to undertake such a responsibility, and that there were many others far more competent to do so among the responsible leaders of the profession in Victoria, and none more capable of doing so than the President. Second thoughts, however, made him realize that if by virtue of his position as a member of the Federal Council and also as the immediate past president of the New South Wales Branch he could help to bring about a better understanding of the problems of the profession in the two great eastern States, it was his duty to accept the invitation. He had also been stimulated by the example of the senior member of the Council of the New South Wales Branch, Sir Charles Blackburn, who so willingly accepted his (Dr. Simmons's) invitation to address the convention held in New South Wales in February, 1943.

The great value of a convention lay in the fact that it enabled all sections of the profession to be represented, and a common policy to be determined after logical and dispassionate discussion.

In holding the convention at this time the profession in Victoria was fortunate in that it would be able to consider the basic principles and policy for a general medical service recently adopted by the Federal Council. These principles and policy represented, so far as the Federal Council was able to determine at that time, the views of the profession as a whole in Australia.

Judging from the resolutions on the agenda, these principles and policy had been subject to a good deal of consideration by all groups and subdivisions. It was no easy task for the Federal Council to coordinate the views of a profession in a country like Australia, the geographical conditions of which produced such a variety of problems. These coordinated views had been subject to criticism from time to time, but often unjustly, by members of the profession who had failed to appreciate the fact that it was for and on behalf of the profession as a whole in Australia that the Federal Council acted and thought.

The Federal Council had been criticized because it had not introduced a concrete scheme for a medical service. The answer to this criticism was that the Council was definitely of the opinion that no detailed scheme could be introduced until the profession as a whole had agreed upon general principles.

Dr. Simmons referred to the Beveridge report and to the action taken in regard thereto by the British Government. As they were all aware, this report envisaged a comprehensive medical service available to everyone irrespective of income. In order to obtain the views of the profession as to how such a medical service could be brought into being, the Ministry of Health, in its wisdom, saw fit to convene a representative committee to confer with officers of the department. In communicating with the profession the Secretary of the Ministry of Health stated: "What he, the Minister, desires is a frank expression of the opinions of those best qualified to judge both issues of a technical and professional kind and, what is no less important, as to the possible attitude of the profession towards any proposals which may be put forward."

How different was the approach of the Australian Minister of Health to the problems which were to be considered at the convention.

At the present time a Parliamentary Joint Committee on Social Security was consolidating evidence it had collected from all over Australia. It had seen fit to appoint a factual committee to collect detailed information which, it was said, was impossible to obtain by any other means. Then when all this evidence was collected, and not till then, would the accredited leaders of the profession be called in conference with the Joint Committee and the National Health and Medical Research Council to try to find some common ground on which the foundations of a medical service for Australia would be laid.

It would have been far wiser and more statesmanlike had the Commonwealth Minister for Health followed the lead of his English *confrère* and conferred with the Federal Council, the two Royal Colleges, and the National Health and Medical Research Council with a view to appointing a representative committee to advise him and his officers.

Turning to the question of the relationship of the profession to the public, Dr. Simmons said that the public had looked to the profession to provide them with an efficient and complete medical service. If the organized profession failed to carry out its responsibility it was quite within the rights of the people to make other arrangements.

The solution of the problem of providing such a medical service therefore lay to a large extent in the profession's own hands. In the past doctors had not, as an organized profession, influenced the social structure as they might have done. As citizens they had a full right to say their piece in the new order of things; and as doctors it should be possible for them to inculcate in the mind of every citizen a respect for scientific medicine, for its potentialities, for its practitioners and for the private practice of medicine.

Dr. Simmons's own wish was that the private practice of medicine should not perish from the earth, but should continue with a wise understanding of the duties and responsibilities of the members of the profession to themselves and the people. To such ideals the profession should give loyal and unfailing support.

Dr. Simmons concluded with a few remarks about members of the profession. He said that there never was a time when loyalty and duty were more needed in the profession than at the present. Differences of opinion there must always be, but surely the profession had learnt, in the words of the leading article of the *British Medical Journal* of March 20, 1943, that its common interests were greater than its common differences. If the profession preserved a united front, no scheme could be introduced that was not, in the profession's view, in the public interest. Dr. Simmons felt so strongly on this question of unity that he wished, in conclusion, to quote the remarks of Sir Charles Blackburn at the close of his address to the New South Wales convention: "Acceptance of membership of any society should imply voluntary surrender of a considerable measure of independence in regard to matters of group concern. That being so, all should strictly adhere to the principle that while it is the clear duty of any member of a group who has considered views on matters of common interest to put them forward as convincingly as possible, it is equally his duty, if he fails to convince, to gracefully accept the verdict and forthwith loyally support the policy adopted by the majority."

Resolutions Adopted by the Convention.

The President explained that no detailed report of the discussions would be published. The following are the resolutions adopted after discussion of the resolutions sent to the Branch from the Federal Council.

1. That this convention is completely opposed to any drastic alteration in the form of medical service to the community during the war and for one year afterwards.

2. That this convention, having ascertained the views of the medical profession in Victoria, is opposed to a nationalized salaried medical service.
3. That this convention is opposed to any large extension of contract practice.
4. That the medical profession, through the Federal Council of the British Medical Association in Australia, is willing and anxious to cooperate with the Government in bringing about certain essential improvements in the existing forms of medical service to the community.
5. That the following broad definition of the objects of a medical service be adopted:
 - (a) to provide a system of medical service directed towards the achievement of positive health, the prevention of disease and the relief of sickness;
 - (b) to render available to every individual all necessary medical service, both general and specialist, and both domiciliary and institutional.
6. That the principle of free choice of doctor and patient is an essential feature of any service.
7. That the optimum efficiency of medical service to the people of Australia will be provided by the following structure—the existing consultant, general practitioner and hospital services with all adjuncts, and these necessary additions:
 - (a) safeguarding and improvement of nutritional, housing and educational standards;
 - (b) adequate provision for research and statistical investigation;
 - (c) decentralized diagnostic laboratory centres throughout the Commonwealth;
 - (d) an extended consultant service to make consultation readily available to all members of the community;
 - (e) group practice initiated by members of the profession themselves;
 - (f) extension through government grant of the Flying Doctor Service;
 - (g) increased subsidized practitioner service to out-back centres;
 - (h) extension of industrial, venereal, immunological and other preventive medical services;
 - (i) extension of the present maternity services, with the establishment of hostels for waiting mothers;
 - (j) extension of hospital construction and equipment with special reference to the treatment and care of sufferers from tuberculosis and mental diseases and the crippled, bedridden and the aged, and the provision of private and intermediate wards at all public hospitals;
 - (k) extension and improvement of facilities for post-graduate training.
8. That, in considering improvements in the social services, this convention recommends that the following matters be kept in mind:
 - (a) provision to enable any sufferer from pulmonary tuberculosis to be treated apart from his or her family until no longer infectious and provision for the financial care of the family when the sufferer concerned is the wage earner;
 - (b) improvements in the availability of medical services to the middle income group and the provision of domiciliary treatment to the indigent;
 - (c) the extension of invalid pensions, in certain cases, to those temporarily and partially disabled;
 - (d) the extension and unification of hospital contribution schemes;
 - (e) that in all cases where in the interests of the community a bread winner is isolated on account of infectious disease compensation should be made for his loss of income.
9. That, if any scheme be formulated during hostilities, full opportunity for its consideration must be offered to the profession, including members in the fighting forces.
10. That, whilst the health of the community is a national matter, there is a duty on every individual to accept a moral and social responsibility for his own health, that of his dependants and of the community. This individual responsibility must be one of the basic principles in any medical service.
11. That a system based on private practice is the best method of meeting the medical needs of the community.

12. That the teaching of preventive medicine in all its aspects be strengthened.
13. That the existing public medical services be reorganized, extended and coordinated with improved social services, especially those of child welfare and education, and with private practice.
14. That better provision be made for post-graduate education.
15. That any system of national medical service controlled by friendly societies or comparable bodies is not acceptable to the medical profession.

The remaining time of the convention was taken up with a discussion on a fee-for-service system of medical practice.

Correspondence.

SENSITIZATION TO CARROT (EXTERNAL CONTACT).

SIR: On May 20, 1943, I was consulted by a middle-aged woman who complained of a rash on the arms. She had been employed for a month in scraping carrots for canning. Before that she had been occupied in home duties. She gave no history of previous skin eruption, and described her work as consisting of handling the carrots after they had come from a mechanical scraper. Her job was to complete the scraping of grooves and parts which had escaped the mechanical process, and cut off the stump of stalk which remained attached to the root. This was the sum total of her duties, the carrot then being passed on by a travelling belt to other workers.

The rash first appeared six days before the consultation, namely, on May 14, on the inner side of the left forearm which came into contact with the bench. It started on the right forearm on May 19. She was accustomed to use "Solvol" in an attempt to take the stain off her hands, which were coloured a deep yellow on the palmar surfaces. She did not, however, use "Solvol" on the arms.

The patient exhibited an acute oedematous vesicular dermatitis involving the whole of the inner aspect and extending onto the front of the left forearm. There was a similar but less marked condition on the inner side of the right forearm. There were a few papulo-vesicular lesions about the posterior surfaces of the bases of the fingers.

I could hardly believe that this condition was due to sensitization towards carrot. I have known persons to become sensitized to parsnip leaves and who developed a dermatitis on the arms as a result of pulling parsnips from the ground, but I had not previously observed an instance of sensitization to carrot. Moreover, a period of three weeks seemed to be a short one for the development of sensitization. However, the patient was given the benefit of the doubt, and was recommended for Workers' Compensation, and she returned to her home.

The next day, May 21, she developed acute swelling of the face, especially about the lids, and what appeared to be an acute toxic erythema on the trunk. I went out and saw the patient in consultation with Dr. D. L. Howell, of Croydon, who was her family doctor. The condition, according to Dr. Howell's observation, had been rather alarming, but was already beginning to settle down when I saw her in her own home.

On June 8 Dr. Howell sent the patient again into my rooms. The skin condition was then practically well. I applied patch tests across her upper scapular region, one of the few areas which had been quite free from eruption. The patches were as follows:

- No. 1: carrot leaf.
- No. 2: thin slice of locally grown carrot root.
- No. 3: thin slice of Tasmanian carrot root (somewhat desiccated).
- No. 4: thin cross section of carrot stalk.

Twenty-four hours later the patient reported again and complained that she had had a very uncomfortable night, and that the patches were causing a sensation of burning. On being removed, No. 1 (carrot leaf) showed a negative result, but Nos. 2, 3 and 4 were definitely and unmistakably positive, the skin in contact with the carrot root and carrot stalk being bright red and oedematous. There is, therefore, no doubt that the patient is sensitized towards carrot.

The patient stated that she rarely took carrot as a food, and then only as an admixture to other vegetables in soups

or stews. She had never taken carrot raw with salad, and so there was little chance of discovering whether she had become sensitized through food. It was considered advisable to warn the patient not to take carrot, especially raw carrot, in her diet. It was thought possible that cooking of carrot might alter it sufficiently to prevent it acting as a local irritant.

In order to determine whether cooking altered the composition of carrot root to the extent of making it non-irritant to this patient, I applied a few days later a patch test with well-boiled carrot root. On removing the patch twenty-four hours later the follicles on the area of skin were raised and slightly inflamed. After another twenty-four hours had elapsed the area was again examined and was then found to be definitely positive, the area which had been in contact with the carrot showing closely packed pinhead vesicles on a red oedematous base.

When reading the result of the second patch test, the areas 2, 3 and 4 of the first series were still visible, although brown pigmentation had replaced the red of the inflammatory period.

In view of the second patch test it was thought even more strongly advisable that the patient should be warned against eating carrot. She promised to refrain from taking this item of food in future.

Yours, etc.,

E. H. MOLESWORTH.

235, Macquarie Street,
Sydney,
June 30, 1943.

PEMPHIGUS.

SIR: Dr. John Kelly's discussion of pemphigus (THE MEDICAL JOURNAL OF AUSTRALIA, June 26, 1943, page 587) should not be left without a comment.

1. Nikolski's sign (decortication phenomenon) is of paramount importance for the diagnosis of true pemphigus. Its occurrence in the cases of typical *dermatitis herpetiformis* are, in my experience, very rare. Molesworth ("An Introduction to Dermatology", 1937, page 376) is perfectly right when affirming that "this sign is generally demonstrable in the more advanced cases of pemphigus". It may be elicited in *epidermolysis bullosa*, though not so regularly. The reaction to trauma in *epidermolysis bullosa* is often not the true Nikolski's sign (that is, the rupture of the adhesion between the *stratum corneum* and the subjacent prickle layer), but the provocation of transudation and formation of a bulla.

2. The death of two children, at the age of seventeen and fourteen days respectively, is unlikely to be due to *pemphigus vulgaris*. *Pemphigus vulgaris*, *foliaceus* and *vegetans* occur in adults. Among many hundreds of cases seen in Poland and in other countries of Central Europe, I cannot recall one case in an infant or young child in contradistinction to *dermatitis herpetiformis*, which is not uncommon in children. My youngest patient was a boy of four years.

I agree with Roxburgh ("Common Skin Diseases", page 406) that "cases called pemphigus in children are really *dermatitis herpetiformis*". Cases of *pemphigus vulgaris congenitus* (Werther and others) were in fact misdiagnosed toxicodermas (drug eruptions) due to arsenical treatment of the mothers who had been affected with a bullous eruption during the last period of pregnancy.

There is a condition in newborn children known as *pemphigus épidermique des nouveau-né*, *pemphigus neonatorum contagiosus* or pemphigoid which starts in the first eight to fourteen days of life and appears as an acute bullous eruption. Malignant cases show a rapid progression, denudation of large surfaces, which have been occasionally mistaken for burns and have even led to legal action against nursing personnel. They were also described as *dermatitis exfoliativa neonatorum* or Ritter's disease. Death results in over 50% of cases. Dr. Kelly's description fits better into this condition than into *pemphigus vulgaris*.

3. Dr. Kelly presented two other children who were supposed to suffer from pemphigus. The eldest member of the family (who? parent?) had died of pemphigus in 1938. The description of the children's condition is characteristic of *epidermolysis bullosa*, but not of pemphigus. The early appearance of blisters, the affection of mucous membranes, and the dystrophy of nails are striking signs of a dystrophic form of the *epidermolysis bullosa*. While in *epidermolysis bullosa simplex* there is generally a family history of the disease which exhibits dominant type of heredity, the dystrophic form often lacks any history of the disease in

the family, may occur sporadically in a family and be of irregular recessive type of heredity.

Yours, etc.,

F. GOLDSCHLAG.

British Medical Association House,
135, Macquarie Street,
Sydney.

July 6, 1943.

Medical Practice.

RESTRICTION OF INTERSTATE PASSENGER TRANSPORT BY RAILWAY.

THE following statement is published at the request of the Acting Area Controller of the Commonwealth Land Transport Board, Sydney.

Sir Harold Clapp, Director-General of Land Transport, has drawn attention to the number of medical certificates presented to priority officers in all States of the Commonwealth in support of applications for priority permits for interstate rail travel on behalf of persons who desire to obtain a change for health reasons.

Sir Harold Clapp points out that priority permits for interstate rail travel are not granted for this reason, as it is felt that owing to conditions brought about by the war, any change necessary should be obtained within the State of residence.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 148, of July 8, 1943.

CITIZEN NAVAL FORCES OF THE COMMONWEALTH.

Royal Australian Naval Reserve.

Promotion.—Surgeon Lieutenant David Norman Livingstone Seward is promoted to the rank of Surgeon Lieutenant-Commander, dated 1st June, 1943.

Fixing Rates of Pay.—Surgeon Lieutenant-Commander Donald Keith McKenzie to be paid the rates of pay and allowances prescribed in the Naval Financial Regulations for Surgeon Commander (on promotion), whilst acting in that rank, dated 17th April, 1943.

ROYAL AUSTRALIAN AIR FORCE.

Citizen Air Force: Medical Branch.

The appointment of Squadron Leader A. W. Bayley (271886) is terminated with effect from 10th June, 1943, on medical grounds.

The probationary appointments of the following Flight Lieutenants are confirmed: E. D. E. E. O'Brien (257096), L. P. Blashki (267136), N. F. Pescott (5177).

CASUALTIES.

ACCORDING to the casualty list received on July 15, 1943, Major C. Rudd, A.A.M.C., Auchenflower, Brisbane, has been removed from the dangerously and seriously ill lists.

According to the casualty list received on July 15, 1943, Captain H. K. Denham, A.A.M.C., Brisbane, has been removed from the seriously ill list.

According to the casualty list received on July 20, 1943, Captain W. R. Phillips, A.A.M.C., Wallaroo, South Australia, who was previously placed on the seriously ill list, has now been transferred to the dangerously ill list.

According to the casualty list received on July 20, 1943, Captain E. Falloon, A.A.M.C., Wonthaggi, Victoria, has been placed on the seriously ill list.

Obituary.

JOSEPH GEORGE THOMPSON.

WE regret to announce the death of Dr. Joseph George Thompson, which occurred on July 13, 1943, at Newcastle, New South Wales.

JAMES PIRIE.

We regret to announce the death of Dr. James Pirie, which occurred on July 19, 1943, at Liverpool, New South Wales.

Nominations and Elections.

THE undermentioned have applied for election as members of the Tasmanian Branch of the British Medical Association:

Duncan, Campbell Amlet, M.B., B.S., 1933 (Univ. Melbourne), B.Sc., 1936 (Univ. Tasmania), 24, Campbell Street, Hobart.
MacGowan, Ian Thorburn, M.B., B.S., 1943 (Univ. Melbourne), Royal Hobart Hospital, Liverpool Street, Hobart.

The undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

Brandt, Nicholas Alfred, M.B., B.S., 1943 (Univ. Sydney), 60, Warragul Road, Turramurra.
Britten, David Abbott, M.B., B.S., 1937 (Univ. Sydney), 100, Kelra Street, Wollongong.
Carter, Lindsay Vaughan, M.B., B.S., 1942 (Univ. Sydney), 100, Greenwich Road, Greenwich.
Channon, James Edward Grey, M.B., B.S., 1940 (Univ. Sydney), 1, Locksley Street, Killara.
Dodson, Leigh Frederick, M.B., B.S., 1943 (Univ. Sydney), Saint Vincent's Hospital, Darlinghurst.
Farrar, James Martindale, M.B., B.S., 1943 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.
Graham, Phyllis Mary, M.B., B.S., 1943 (Univ. Sydney), Sydney Hospital, Macquarie Street, Sydney.
Grieve, Percy Neil, M.B., 1915 (Univ. Sydney), Walgett Street, Collarenebri.
Greenwell, Peter Howard, M.B., B.S., 1941 (Univ. Sydney), 5, Locksley Street, Killara.
Hirsz, Jehuda, registered in New South Wales on December 3, 1941, under section 17A of *The Medical Practitioners' Act, 1938-1939*, c.o. Mr. Harris, 51, Moorami Avenue, Kensington.
Johns, Kevin, M.B., B.S., 1941 (Univ. Sydney), 132, Albany Road, Stanmore.
Joyce, Brian Bilbrough, M.B., B.S., 1943 (Univ. Sydney), Goulburn District Hospital, Goulburn.
Keen, John Alexander, M.B., B.S., 1943 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.
Lee, Charles William Garnock, M.B., B.S., 1942 (Univ. Sydney), 168, Pacific Highway, Roseville.
Loveridge, Gordon Balfour, M.B., B.S., 1943 (Univ. Sydney), Lewisham Hospital, Lewisham.
Maxwell, Clifton Murray, M.B., B.S., 1942 (Univ. Sydney), 104, Alice Street, Newtown.
Middleton, Peter Guy, M.B., B.S., 1943 (Univ. Sydney), "Inveraray", Heydon Avenue, Warrawee.
Moffitt, Adrian Grenfell, M.B., 1940 (Univ. Sydney), NX130807, 12th Australian Army Field Regiment, A.I.F., Australia.
O'Shea, Brian Daniel, M.B., B.S., 1942 (Univ. Sydney), Saint Margaret's Hospital, Bourke Street, Darlinghurst.
Oxenham, Gordon Vincent, M.B., 1942 (Univ. Sydney), 37, Sowerby Street, Muswellbrook.
Simpson, Ian Gordon, M.B., B.S., 1942 (Univ. Sydney), 48, Kingslangley Road, Greenwich.
Wurth, Donald James, M.B., B.S., 1943 (Univ. Sydney), Sydney Hospital, Sydney.

Medical Appointments.

Dr. William Gillilan has been appointed honorary dermatologist at the Mental Hospital, Parkside, South Australia.

Dr. Eugene Abraham Matison has been appointed honorary aural surgeon at the Mental Hospital, Parkside, South Australia.

Dr. Owen Meredith Moulden has been appointed honorary gynaecologist at the Mental Hospital, Parkside, South Australia.

Books Received.

"Social Insurance and Allied Services", Report by Sir William Beveridge; 1942. London: His Majesty's Stationery Office; Melbourne: Robertson and Mullens Limited. 9½" x 6", pp. 299, with 45 tables. Price: 3s. 7d.(A).

Diary for the Month.

JULY 27.—New South Wales Branch, B.M.A.: Medical Politics Committee.
JULY 28.—Victorian Branch, B.M.A.: Council.
JULY 29.—New South Wales Branch, B.M.A.: Branch.
AUG. 3.—New South Wales Branch, B.M.A.: Organization and Science Committee.
AUG. 4.—Victorian Branch, B.M.A.: Branch.
AUG. 4.—Western Australian Branch, B.M.A.: Council.
AUG. 5.—South Australian Branch, B.M.A.: Council.
AUG. 6.—Queensland Branch, B.M.A.: Branch.
AUG. 10.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
AUG. 10.—Tasmanian Branch, B.M.A.: Branch.
AUG. 13.—Queensland Branch, B.M.A.: Council.
AUG. 17.—New South Wales Branch, B.M.A.: Ethics Committee.
AUG. 18.—Western Australian Branch, B.M.A.: Branch.
AUG. 19.—New South Wales Branch, B.M.A.: Clinical Meeting.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phoenix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility unless such a notification is received within one month.

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the Journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £3 5s. abroad per annum payable in advance.

Medical Practices, etc.

Country and Suburban Practices
for Transfer.

Particulars Supplied in
Confidence.

Locums, Assistants, etc.

GOYDER, SON & CO.,

Medical Agents,
Calcart House, 11c Castlereagh
Street, Sydney. BW 7149.

**Australian Physiotherapy
Association**

(Australasian Massage
Association)

NEW SOUTH WALES

Massage, Remedial Exercises and
Medical Electricity.
Occupational Therapy.

Members are fully trained in
these subjects and work only
under the direction of a regis-
tered medical practitioner.

Further information obtainable
from the Secretary,

MISS E. P. EVANS,
185 Elizabeth Street, Sydney.
(MA 2031.)

PERCIVAL D. OLLÉ

M.S.R., B.P.A., N.R. (Eng.),
Masseur, Physio-Therapist.
Short and Ultra-Short Wave,
4 to 30 Metres. At rooms only
owing to screening. Ultra-
Violet, Infra-Red, Diathermy,
Iontophoresis. Physical inju-
ries treated.

"Wembury",
4 Elizabeth Street, Ashfield.
Telephone UA 1097.

Service for Doctors

Watson House, Bligh Street,
Sydney. Telephone BW 4433.

Practice in large country town.
All hospital facilities, good tak-
ings, excellent house. In growing
district.

Suburban — Growing Practice.
Hospital facilities, a number of
lodges. Purchase of house
optional, will rent. Terms
available.

Death Vacancy, Suburban.
Medium Sized Practice.

**WATSON VICTOR
LIMITED**

LICENSED BUSINESS AGENTS
117 Collins Street, Melbourne
105 Eagle Street, Brisbane
And at Perth and Adelaide

Arthur Niall & Coghlan

MEDICAL AGENTS,
127 Collins Street East,
Melbourne.
C. 1322.

**W. RAMSAY
(Surgical) Pty Ltd**

SURGICAL INSTRUMENTS
AND HOSPITAL
APPLIANCES

Latest Medical and Surgical
Books Available

Sole Australasian Agents
"BECKS"

W. RAMSAY
(Surgical) Pty. Ltd.

240 Swanston St., Melbourne
18 Howard Street, Perth
11 Austin St., Adelaide

**ESTATE OF DR. A. F. STOKES
DECEASED.**

TENDERS FOR PURCHASE OF MEDICAL
PRACTICE AND DWELLING AT
MOSELEY STREET, GLENELG,
SOUTH AUSTRALIA.

Sealed tenders marked "Tender
for Medical Practice" will be
received by the undersigned up to
noon of 9th August, 1943, for the
purchase of:

- (1) Goodwill of the medical
practice of the late Dr. A. F.
Stokes.
- (2) His residence.
- (3) His instruments, equipment
and drugs.

No tender necessarily accepted.
Forms and conditions of tender
obtainable from Davies and Giles
(Solicitors for Executors), Sel-
borne Chambers, Pirie Street,
Adelaide.

SUBSIDIZED PRACTICE.

ARIAH PARK, N.S.W.

SALARY £1,000 PER ANNUM.

Applications are invited for the
position of Government Subsidized
Doctor at Arianh Park at £1,000
per annum.

Applications close on August 21,
1943.

Particulars from Rev. E. E.
Chapman, Arianh Park, N.S.W.

**TO LET.—FRONT SUITE TWO
ROOMS,** suit medical or dental
profession, "BEANBAH", 235
Macquarie Street, Sydney. Rent
£3 10s. per week. Apply Super-
intendent on premises or

H. W. HORNING & CO. PTY. LTD.
Licensed Real Estate Agents,
15 Martin Place, Sydney. B 6227-8.

WE HAVE FOR SALE a good
practice in a flourishing
western Queensland town, modern
hospital, all conveniences, climate
suitable for an asthmatic, scope
for surgery. Satisfactory reasons
for selling.

Full details from British Medical
Agency of Queensland Pty. Ltd.,
225 Wickham Terrace, Brisbane.

CHIROPODY

Master Chiropodist,
Room 19, Fourth Floor,
Challis House,
10 MARTIN PLACE, SYDNEY.
Phone BW 6642.
T. R. CHRISTIE,
Diploma Scientific Chiropody.

GOVERNMENT OF TASMANIA.

DEPARTMENT OF PUBLIC
HEALTH.

GOVERNMENT MEDICAL
OFFICER.

Applications are invited from
medical practitioners for appoint-
ment to the above position.

Particulars of salary, emolu-
ments and leave are set out
hereunder:

Commencing salary: £700 per
annum, increasing to £750 at
the end of twelve months' service.

House allowance: £50 per annum.
Gratuity, payable at the end of
each year of satisfactory
service: £50.

Mileage, for use of own motor-
car: sixpence per mile.

Fees for services rendered out-
side prescribed consulting
hours: 10s. 6d. at surgery
and £1 1s. at home of
patient.

Annual holiday leave (on full
pay): one month.

Sick leave (under five years' service): on full pay, one
month; on half-pay, two
months; without pay, six
months.

All drugs, etc., required for the
use of the medical officer are pro-
vided by the Government.

Applications, stating age, ex-
perience, qualifications and marital
status, should be addressed to the
undersigned, from whom further
particulars may be obtained.

Applications close 31st July, 1943.

E. J. TUDOR,
Secretary for Public
Health.

Hobart,
30th June, 1943.

PUT AN ENDING
TO NEEDLESS
SPENDING

**British Medical Agency of New South Wales Ltd.**

B.M.A. HOUSE, 135-137 MACQUARIE STREET, SYDNEY

FOR ALL MEDICAL AGENCY SERVICE CONSULT YOUR OWN AGENCY

IF YOU ARE DESIROUS OF SELLING YOUR PRACTICE LIST IT WITH US NOW

Members of the Profession desiring to retire or change in the post-war period or now should
forward particulars to us now. Enquiries for Partners or Assistants will also be welcomed.
Applicants for Locums and Assistantships wanted.

INSURANCE OF ALL KINDS EFFECTED—COPYING, DUPLICATING, MSS., MEETING NOTICES

FINANCIAL ASSISTANCE FOR THE PURCHASE OF PRACTICES IS AVAILABLE IN APPROVED CASES

Telephone B 4159. After Hours XM 5572. Telegrams: "Locumtens Sydney". F. W. DOUTCH, Manager.



In Spastic Colitis

This bulk-producing hydrophilic colloid supplies
bland lubrication without impairing vitamin absorption

Mucilose



*Mucilose Granules—Plain and
with Kasagra are available in
2 oz., 4 oz. and 16 oz. bottles.*

Supplies bland bulk to the spastic colon,
and overcomes cramping without causing
irritation to the sensitive gastro-intestinal
tract. Mucilose has a viscous tenacity,
and does not leak. Where stimulation
by bland bulk alone is unavailing
Mucilose with Kasagra is indicated, but
it should be discontinued in favour of
the Plain Granules once peristalsis has
been established.

Samples and further literature will be
forwarded upon request.

Frederick

Stearns & Company



Since 1855 . . . ESSENTIALS OF THE PHYSICIAN'S ARMAMENTARIUM

NEW YORK

KANSAS CITY

DETROIT, MICH.

SAN FRANCISCO

WINDSOR, ONTARIO

SYDNEY, AUSTRALIA

AUCKLAND, NEW ZEALAND

Wholly set up, printed and published at the Printing House, Seamer Street, Glebe, Sydney, N.S.W., by ARTHUR FREDERICK ROOTS
SIMPSON, of Fairholm Street, Strathfield, New South Wales, on behalf of the AUSTRALASIAN MEDICAL PUBLISHING COMPANY
LIMITED, Seamer Street, Glebe, Sydney, New South Wales.